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MEMBERSHIP in the American Society of Hospital Pharmacists and the American Pharmaceutical Association is open to all practicing hospital pharmacists. With membership are included subscriptions to the American Journal of Hospital Pharmacy and to the *Journal* of the American Pharmaceutical Association, Pract. Pharm. Ed., as well as the several services of each organization.

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American Journal of Hospital Pharmacy

American Society of Hospital Pharmacists

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American Hospital Formulary Service To Be Available Soon

Work on the *American Hospital Formulary Service* is progressing satisfactorily. Even though there have been unexpected delays, it is anticipated that the Formulary Service will be ready for distribution prior to the end of the year.

All monographs have been written and set in type. At the time this issue of the JOURNAL goes to press, we are in the midst of the most critical stage of producing the Formulary Service—actual printing. It is difficult to establish specific schedules for the final aspects of production at this time, but, unless unforeseen problems arise, distribution should not deviate from our schedule by more than a few days. There is a possibility that there may be a slight delay in imprinting the names of the hospital on the binder when this special service has been requested.

Dr. William Heller, Director of the Formulary Service, the Committee on Pharmacy and Pharmaceuticals, the Reference Committee, and many other SOCIETY members are making a significant contribution through their diligent work on the Formulary Service. Interest being shown in the American Hospital Formulary Service is indicative of the important service it will provide to hospitals in achieving improved drug therapy.

The number of prepublication orders which have been received is gratifying. Those who wish to place orders for the American Hospital Formulary Service should direct them to:

American Society of Hospital Pharmacists
The Hamilton Press
Hamilton, Illinois

The price of the Formulary Service, which includes a subscription to receive supplementary drug monographs for one year is $15.00 per copy for less than 10 copies; $14.50 a copy for 10 to 24 copies; and $14.00 a copy for 25 or more copies.

MEETING DATES

1958

December

American Association for the Advancement of Science
December 26 - 31, Washington, D. C.

1959

April

Southeastern Society of Hospital Pharmacists
(In conjunction with Southeastern Hospital Conference April 8 - 10, Atlanta, Georgia. Atlanta Biltmore Hotel

Tri-State Hospital Assembly
(Includes Section on Hospital Pharmacy) April 27 - 29, Chicago. Palmer House.

May

Association of Western Hospitals
(Includes Section on Hospital Pharmacy) May 4 - 7, Salt Lake City, Utah. Utah Hotel

Catholic Hospital Association
Annual Convention, May 30-June 4, Saint Louis, Missouri

August

American Hospital Association
Annual Convention, August 24 - 27, New York City. Coliseum; Statler Hotel

American Pharmaceutical Association
Annual Convention, August, Cincinnati, Ohio

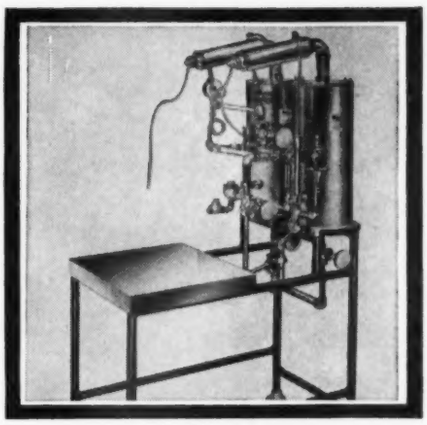
American Society of Hospital Pharmacists
Annual Meeting, August, Cincinnati, Ohio

1960

August

International Pharmaceutical Federation
August 29 - September 4, Copenhagen, Denmark

American Hospital Association
Annual Convention, August 29 - September 1, San Francisco. Civic Auditorium.



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. . . a Barnstead steam-heated, 5 gal. per hour double distilled water outfit gives assurance of high distillate purity. Barnstead Stills will produce continuously and automatically. Distilled water from the 1st still goes directly into the evaporator of the 2nd still. Still No. 2 is fitted with the famous Barnstead Spanish Prison type "Q" baffle. Each unit is complete and ready to operate, including floorstand or storage tank.

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Write for your copy of Barnstead's *new* catalog "H" describing Barnstead's complete line of water stills designed especially for hospitals with capacities from ½ to 1000 gallons per hour.

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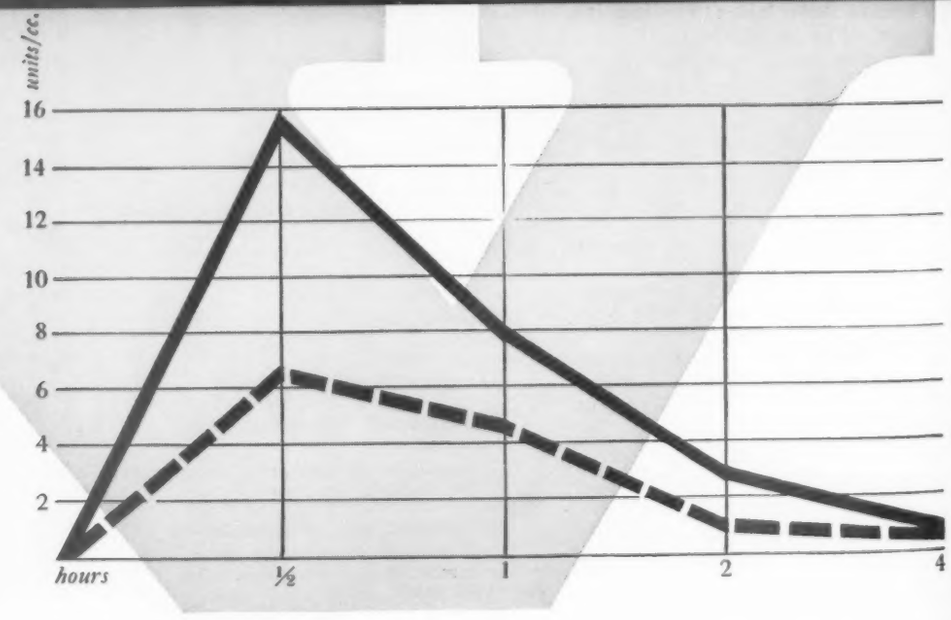

The highest levels of Filmtab Compocillin-VK.

The median levels of Filmtab Compocillin-VK.

Note the high upper levels and averages at ½ hour, and at 1 hour.

Doses of 400,000 units were administered before mealtime to 40 subjects involved in this study.

IN FILMTABS, COMPOCILLIN-VK comes in 125 mg. (200,000 units), bottles of 50 and 100, and in 250 mg. (400,000 units), bottles of 25 and 100.

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When the bronchial tree has too much "bark"

make cough MORE PRODUCTIVE, LESS DESTRUCTIVE

"Significantly superior"[2] cough therapy for "markedly" reducing the severity and frequency of coughing,[1] for increasing respiratory tract fluid,[1] for making sputum easier to raise,[3] and for relieving respiratory discomfort.[4]

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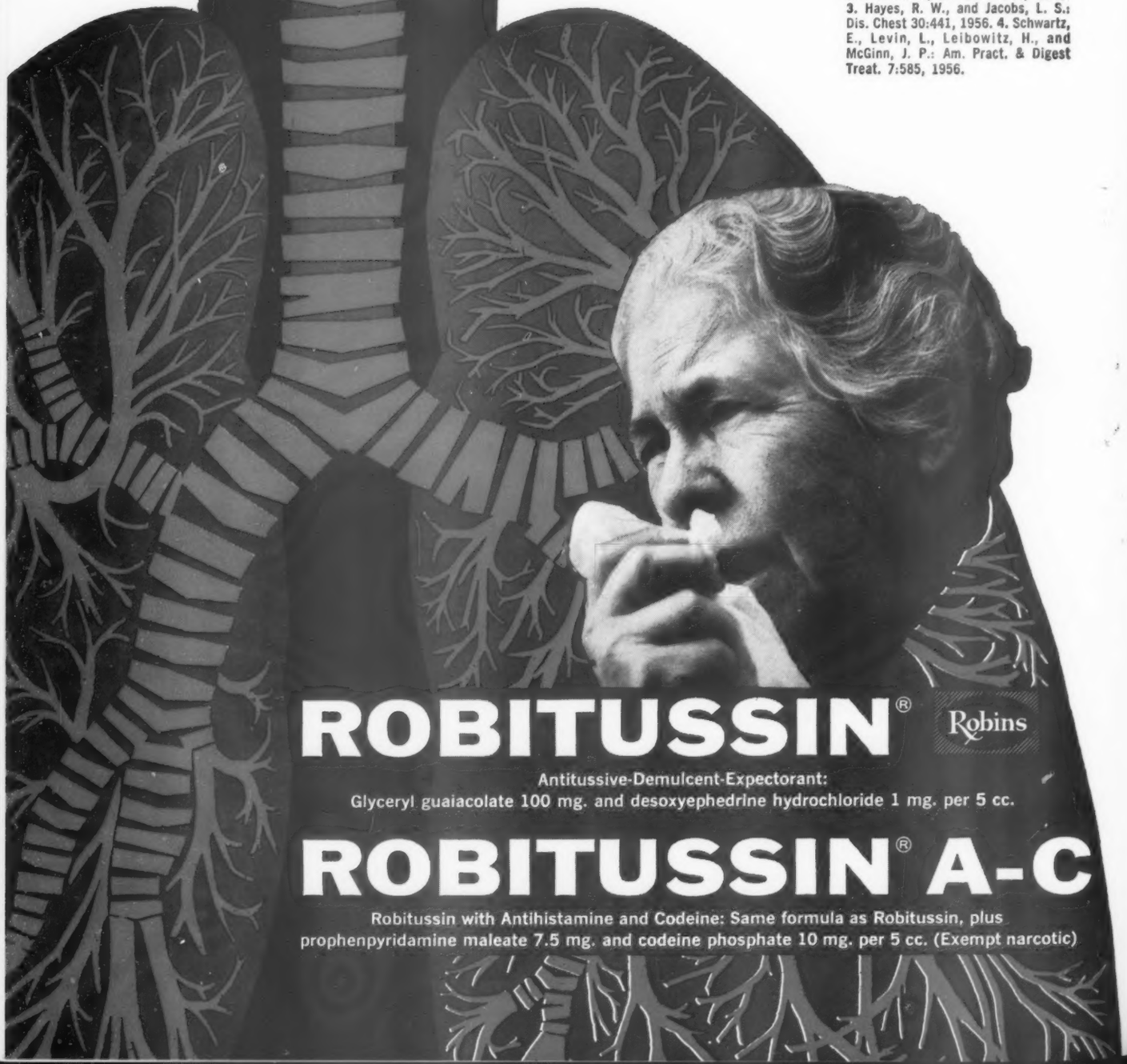
References:

1. Blanchard, K., and Ford, R. A.: Clin. Med. 3:961, 1956. 2. Cass, L. J., and Frederik, W. S.: 2:844, 1951. 3. Hayes, R. W., and Jacobs, L. S.: Dis. Chest 30:441, 1956. 4. Schwartz, E., Levin, L., Leibowitz, H., and McGinn, J. P.: Am. Pract. & Digest Treat. 7:585, 1956.



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EXPERIENCE

MORE THAN 16 MILLION DOSES ADMINISTERED WITH SAFETY AND EFFICACY.

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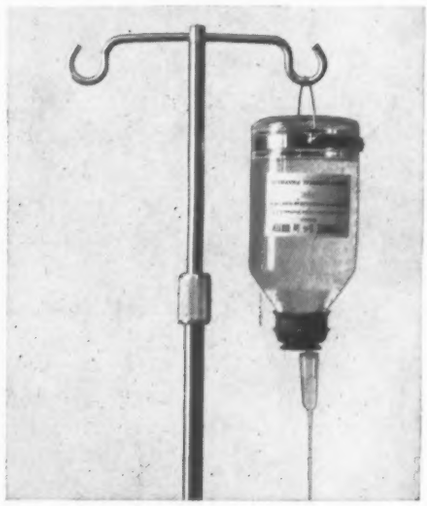
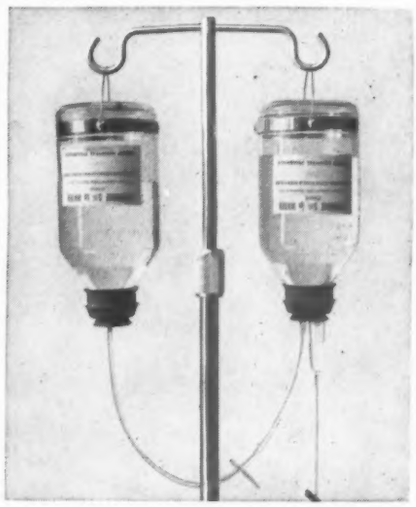
for safe, efficient, convenient

HOSPITAL-PREPARATION OF INTRAVENOUS SOLUTIONS

Self-venting, self-sealing Clik-O-Vac units cost least per use. Completely reusable components — Pyrex flask, stainless steel bail-hanger, rubber Z-hole bushing, nylon cover cap — have long life expectancy.



Solutions may be administered via reusable or semi-expendable sets prepared in the hospital or via low-cost MacBick expendable sets.



Tandem (or series) administration of fluids from two or more flasks saves valuable nursing time. Unbreakable metal ball-check air valves replace cumbersome glass air tubes in flask.

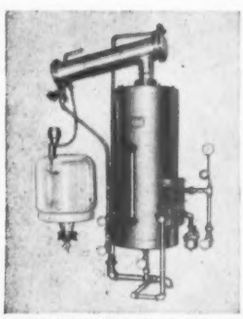
CLIK-O-VAC is the *logical* system for hospital-preparation of intravenous solutions.

CLIK-O-VAC is the most *economical* apparatus because *all* components are reusable . . . simplicity of assembly and sterilization keeps labor costs to a minimum . . . consistently dependable vacuum sealing action of the closure eliminates rejects.

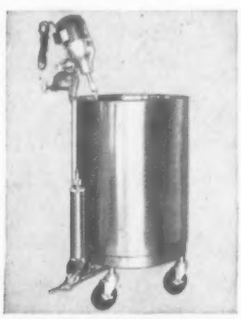
CLIK-O-VAC is the *safest* technique because the closure vents and then seals itself automatically under perfect vacuum. Maintenance of vacuum seal may be verified by jarring sealed flask to produce an audible click.

CLIK-O-VAC is the most *convenient* system. Components are easy to clean, easy to assemble and disassemble. Clik-O-Vac's two-hole closure adapts to simple and varied fluids administration techniques. In addition, Clik-O-Vac flexibility provides interchangeability with most commercial systems, thereby permitting convenient transition from commercial purchase to hospital manufacture.

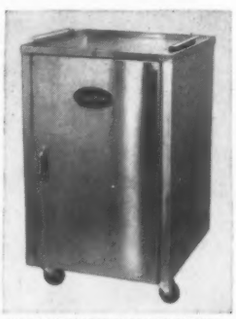
Free samples of flasks, closures and sets will be sent via Air Express upon request. Send post card with name, hospital address and brief description of present apparatus.



BARNSEAD WATER STILLS — Dependable "Q" baffle stills provide large volume of pyrogen-free distilled water necessary for modern CSR and Pharmacy requirements. Supplied by MacBick in models to provide from 5-50 gallons per hour.



SOLUTIONS PREPARATION UNITS— MacBick Batch Tanks are specifically constructed for volume production of topical and parenteral solutions. Made of heavy gauge stainless steel in capacities of 5-100 gallons.



KLEEN-O-MATIC FLASK WASHERS— Utilizing a unique High Pressure Spinning Jet cleaning principle, units are available in several models to suit space and/or budget limitations of particular hospitals.

STERILE EXPENDABLE I. V. SETS — MacBick expendable parenteral fluids administration sets are supplied sterile, pyrogen-free and ready for use. Sets are available with either rigid or squeezable drip chambers.

REUSABLE I. V. SET COMPONENTS— MacBick offers a complete line of reusable, semi-expendable, and expendable components for low-cost hospital fabrication of solutions administration apparatus.

Send for free Data File on systems for intravenous, blood, surgical and small volume parenteral solutions preparation.

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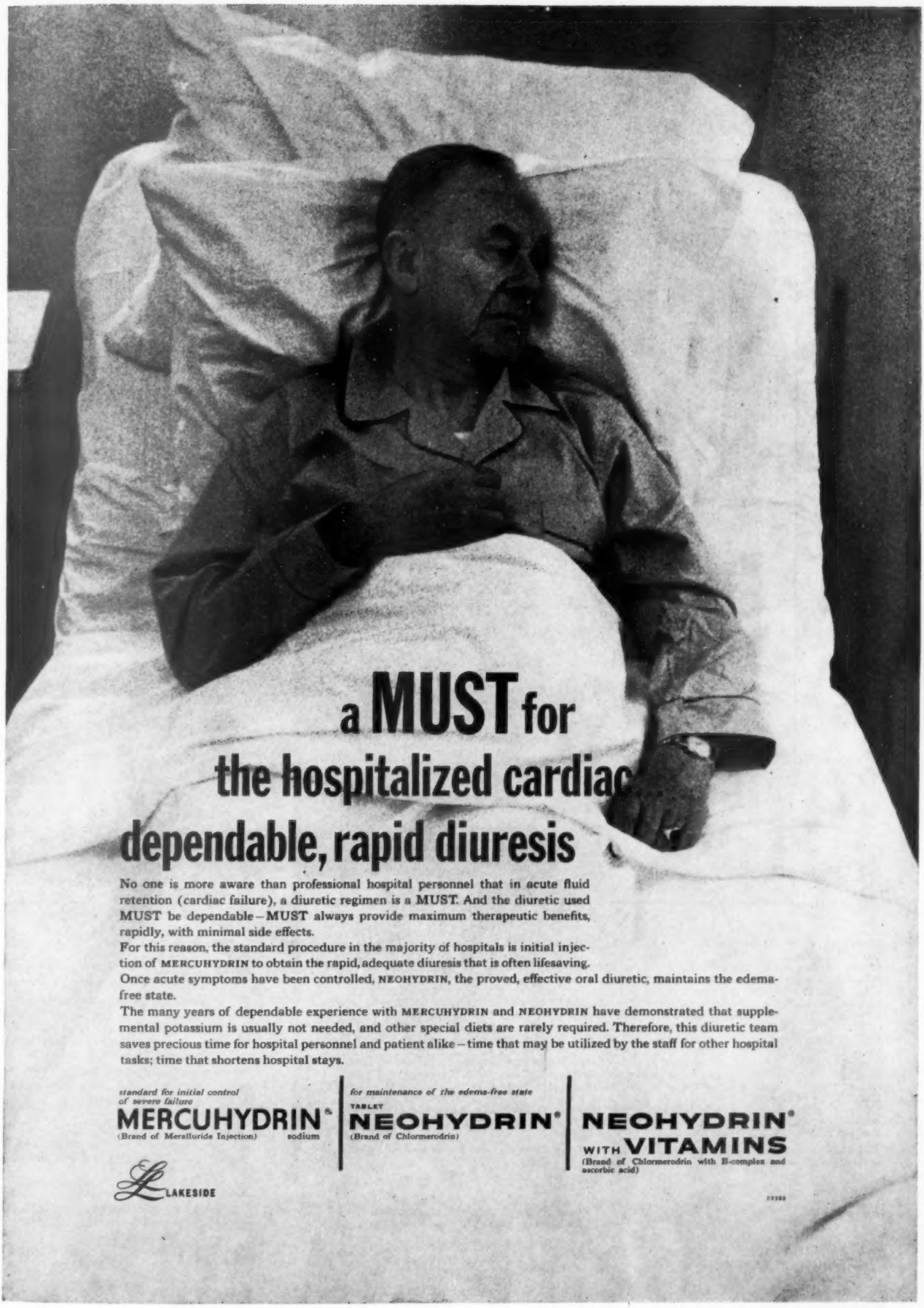
a MUST for
the hospitalized cardiac
dependable, rapid diuresis
No one is more aware than professional hospital personnel that in acute fluid retention (cardiac failure), a diuretic regimen is a MUST. And the diuretic used MUST be dependable—MUST always provide maximum therapeutic benefits, rapidly, with minimal side effects.
For this reason, the standard procedure in the majority of hospitals is initial injection of MERCUHYDRIN to obtain the rapid, adequate diuresis that is often lifesaving.
Once acute symptoms have been controlled, NEOHYDRIN, the proved, effective oral diuretic, maintains the edema-free state.
The many years of dependable experience with MERCUHYDRIN and NEOHYDRIN have demonstrated that supplemental potassium is usually not needed, and other special diets are rarely required. Therefore, this diuretic team saves precious time for hospital personnel and patient alike—time that may be utilized by the staff for other hospital tasks; time that shortens hospital stays.
standard for initial control of severe failure
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for maintenance of the edema-free state
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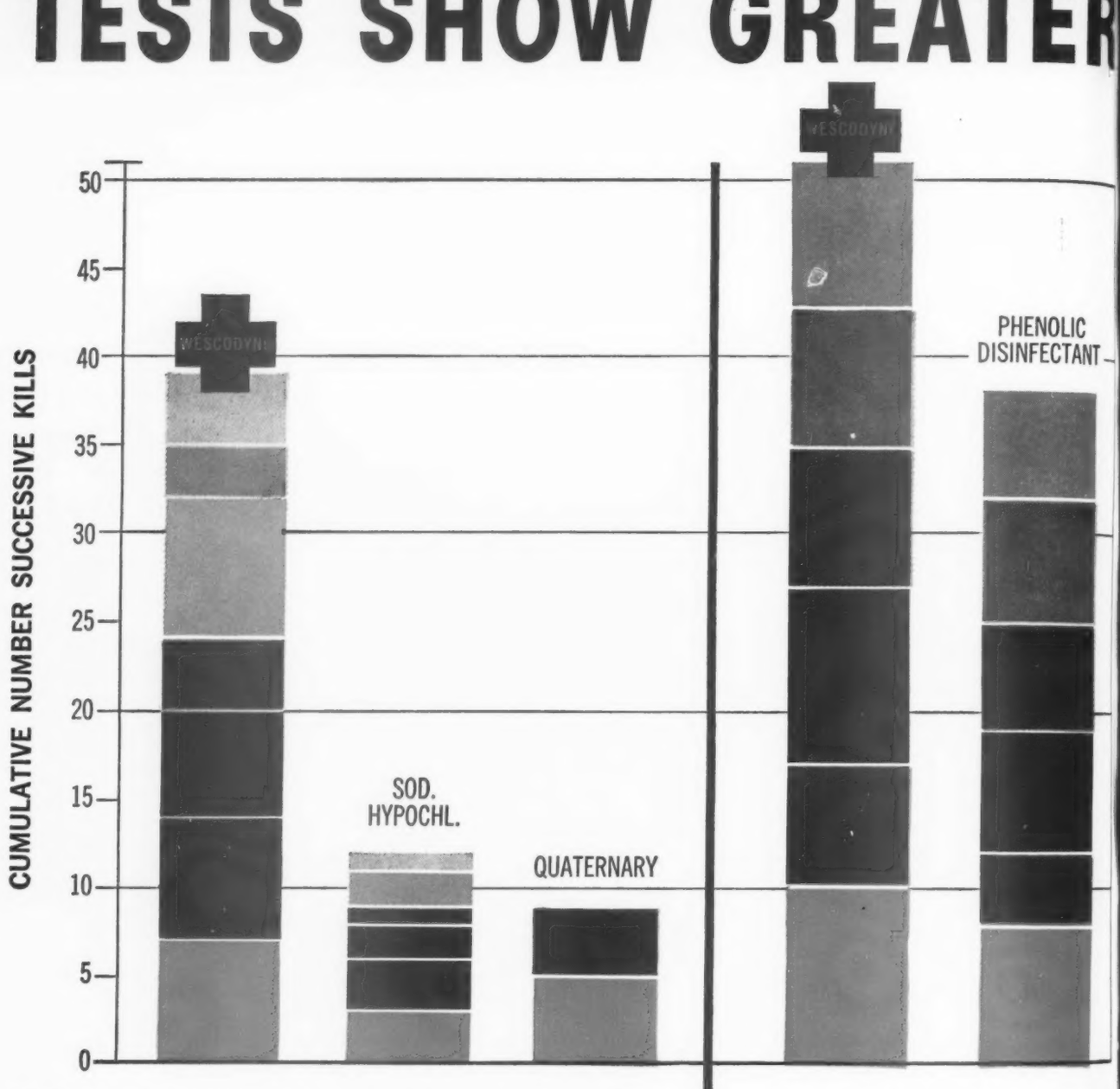
NEOHYDRIN®
WITH VITAMINS
(Brand of Chlormerodrin with B-complex and ascorbic acid)
LAKESIDE

TESTS SHOW GREATER



Capacity Test for Germicidal Action. (A. Cantor and H. Shelanski as described in Soap and Sanitary Chemicals, February 1951.) **Explanation:** This method essentially consists of adding to the use-dilution of the disinfectant or sanitizer, successive doses of a 50/50 mixture of milk plus broth culture of test organisms. These doses are added at ten minute intervals. Thirty seconds after each addition, a transfer is made into broth containing a suitable inactivator. This method makes it possible to determine the capacity of a germicide to kill before the microorganisms and organic contamination have exhausted its germicidal action. **Organisms:** Salmonella typhosa, ATCC #6539; Micrococcus pyogenes. var. aureus, ATCC #6538; Salmonella pullorum, ATCC #9093; Pseudomonas aeruginosa, ATCC #8689; Trichophyton interdigitale Emmons 640, ATCC #9533; Penicillium luteum, ATCC #9644; Saccharomyces cerevisiae, ATCC #10274. **Dilutions:** WESCODYNE: 1:320 (50 ppm available iodine); Sodium hypochlorite: (100 ppm available chlorine); Quaternary: (50%) 1:5,000 (200 ppm active ingredient). **Temperature:** 15°C. **Media:** Fluid thioglycolate medium, USP XIII was used for testing WESCODYNE and sodium hypochlorite "Letheen" broth was used for testing alkyl dimethyl benzyl ammonium chloride.* All tests were re-subcultured in the same medium. **Results:** See above chart. **Conclusion:** The cumulative number of successful kills shows WESCODYNE to be over three times more effective than the nearest material tested.

*Neopeptone dextrose broth was used for testing the alkyl dimethyl benzyl ammonium chloride against the three fungi.

Wescodyne vs. Leading Phenolic Disinfectant. (A. Cantor and H. Shelanski Capacity Test as described in Soap and Sanitary Chemicals, February 1951.) The method used in this test is the same as that used in the Capacity Test for Germicidal Action described at left. **Dilutions:** WESCODYNE: 1:213 (75 ppm available iodine); phenolic disinfectant: 1:100 **Temperature:** 15°C. **Media:** Fluid thioglycolate medium, U.S.P. XIII was used for testing WESCODYNE and FDA nutrient broth was used for testing the phenolic disinfectant. All tests were re-subcultured in the same medium to eliminate bacteriostasis. **Results:** see above chart. **Conclusion:** This test shows that the bactericidal effectiveness (in the presence of organic contamination) of WESCODYNE at a dilution of 1:213 (75 ppm available iodine) is greater than that of a leading phenolic disinfectant at a dilution of 1:100.

PATHOGEN COLOR KEY:

- Salmonella typhosa (typhoid organism)
- M. pyogenes v. aureus (staphylococcus organism)
- Salmonella pullorum (poultry disease organism)
- Pseudomonas aeruginosa (wound contaminent organism)
- Trichophyton interdigitale (athlete's foot type of fungus organism)
- Penicillium luteum (mold organism)
- Saccharomyces cerevisiae (yeast organism)
- Strep. pyogenes hemolyticus (streptococcus organism)
- Escherichia coli (enteric organism)
- Shigella sonnei (dysentery organism)
- Salmonella schottmuelleri (food contaminent causing dysentery)

GERMICIDAL CAPACITY

WESCODYNE's advantages for the destruction of "Staph" as well as other disease producing organisms are extraordinary. Its greater germicidal capacity is shown at left. Two other features are equally outstanding:

❶ Nonselective biocidal activity offers wide-spectrum effectiveness — greater than that offered by solutions containing chlorine, cresylics, phenolics or quaternaries. It destroys organisms that range from mold to bacteria, viruses, spores and fungi. Antibiotic resistant strains of Staph are killed in 2 minutes at the general-purpose use dilution of 75 ppm available iodine.

❷ Labor-saving detergent action removes soil and dust as germs are destroyed. This simplifies procedures, including those for the control of dust that carries Staph and other organisms.

WESCODYNE is the single germicide suitable for all hospital cleaning and disinfecting procedures. Nonstaining, nonirritating, nontoxic at use dilution. Leaves no odor. The cost? Less than 2¢ a gallon at the general-purpose use dilution of 75 ppm available iodine!

WESCODYNE has an unmatched history of scientific evaluation and success. We'd be glad to send full information and recommended O.R., housekeeping and nursing procedures. Write West Chemical Products Inc., West Disinfecting Division, 42-16 West St., Long Island City 1, New York.

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Protective Sanitation and Preventive Maintenance

WEST CHEMICAL PRODUCTS INC.
WEST DISINFECTING DIVISION

WESCODYNE®

FIRST "TAMED IODINE"® DETERGENT-GERMICIDE

Getting the Pill to the Patient

A Candid Look at New Procedures for the Small Hospital Pharmacy

by Alfred A. Mannino
EXECUTIVE DIRECTOR, HOSPITAL DEPT.,
McKESSON & ROBBINS, INC.

Less than half the 7,000 hospitals in the country have accredited pharmacists on their staffs, yet more than 30% of every supply dollar goes for pharmacy purchases. Population is increasing at the rate of more than 7,000 people per day. Disposable incomes continue to spiral. These factors point to a continued expansion in hospitals and hospital services. But while hospitals are growing in number and facilities, the number of trained hospital pharmacists is not keeping pace, and today's shortage will become even more acute as time goes on.

How to provide economical care for the constantly increasing patient load and compensate for the decreasing number of professionally trained personnel, and at the same time cope efficiently with the growing complexities of modern drug buying, is one of the toughest problems facing hospital administrative staffs today.

How are hospitals meeting this challenge? In smaller hospitals, who is responsible for "getting the pill to the patient?" Sometimes it is the general purchasing agent. Often an overworked doctor or nurse —or even the administrator himself. But whoever it is, this extra responsibility is a tremendous burden, especially when you consider the some 7,000 items with which the average hospital pharmacy deals. Obviously, a knowledge of the economic factors of successful management activities, particularly astute buying and inventory procedures, is essential to his success. One serious problem confronting hospitals today is the increasing number of new and nonstandard items. New items, new sizes and duplicates have also become a costly factor. Even storage is a headache. Less than half the country's hospitals are able to handle more than a three-month inventory.

Two keys to efficient hospital pharmacy operation, then, are: standardization and scientific inventory management. But how is the already overburdened person in authority to achieve them without a trained hospital pharmacist?

The answer—and, fortunately, there is an answer—is to look to a supplier of unquestioned integrity and comprehensive services to act as a reliable pharmacy consultant. A good supplier can be counted on to screen and select only drugs and drug products produced by reputable manufacturers, thus insuring reliable merchandise and reduce the need to carry nonstandard items. He will also help maintain a stock level at which the combined costs of *procuring* supplies and *carrying* inventory are at a minimum. And there are countless other services he can offer. Thus, it is important to choose a supplier carefully, to investigate his qualifications and services thoroughly. Here is a checklist of 6 basic questions to aid in his selection:

1. **Will he give you competent professional advice that is honest and unbiased?** (Each one of McKesson's Hospital Service Departments offers the services of a responsible drug therapy consultant—"Rex" McKay®, a trained pharmacy specialist, who is ready to advise on specific problems, to speed emergency delivery service when requested and to keep you abreast of the latest drug developments.)
2. **Does he carry a complete stock of all items you might need?** (McKesson buys from every major drug manufacturer as well as manufacturing under its own label, and researches every new item on the market to determine which manufacturer makes the one best suited to hospital use. McKesson also provides warehouse facilities for bulky items for many small hospitals.)
3. **Does he have the latest information on new developments in the drug field?** (Twice a year, McKesson's Hospital Service Department men undergo intensive training to help them keep up with new products, new methods, new developments that will in turn help hospital pharmacists.)
4. **Does he buy in large quantities direct from manufacturers?** (Whenever quantity purchasing is advantageous, McKesson does so and passes the savings along.)
5. **Does your supplier have national distribution?** (McKesson & Robbins, for example, maintain 82 professionally staffed and completely stocked Hospital Service Departments throughout the country. They service well over half the country's 7,000 hospitals right now and have a total of 125 years' experience in dispensing, manufacturing and distributing drug and pharmaceutical products.)
6. **Is he nearby and readily available?** (McKesson's 82 Hospital Service Units are strategically located throughout the country. They offer a local source of supply that is available any hour of day or night for emergency deliveries as well as routine service.)

Some hospitals, of course, buy direct, but 60% find McKesson & Robbins Hospital Service Departments "just what the doctor ordered." They depend largely on McKesson for economical and efficient management of their hospital pharmacies. McKesson's Hospital Service Departments make a specialty of servicing the small hospital pharmacy and they welcome inquiries on any phase of hospital pharmacy operation. We will send you the name of the McKesson Hospital Service Department nearest you—address inquiry to A. A. Mannino, McKesson & Robbins, 155 East 44 St., New York 17, N. Y.

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MINIMS...a particularly valuable administration unit for . . .

- **SURGERY**
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Now 2000 unit tablet—
No increase in price

a uterine relaxing hormone

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IN PREMATURE LABOR

and dysmenorrhea

LUTREXIN is a naturally occurring, non-steroid, uterine relaxing ovarian hormone proven by biochemical methods to differ from all other ovarian hormones.

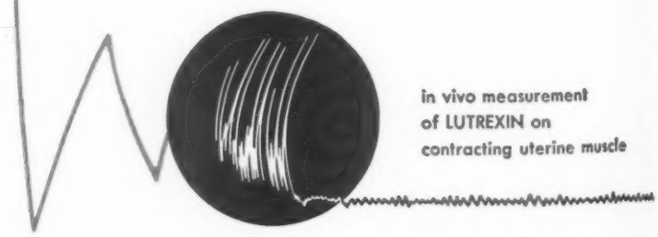
LUTREXIN blocks the action of pituitary hormones.[1]

LUTREXIN has produced favorable clinical results in premature labor,[2,3,4] and dysmenorrhea.[5,6]

LUTREXIN, orally administered, appears in the blood stream within thirty minutes and specifically relaxes uterine muscle contractions (as in the accompanying tracing).

Supplied in bottles of 25—
2000 unit tablets

1. Bryant, H. H.: to be published.
2. Majewski, J. T. and Jennings, T.: Obstetrics & Gynecology, Vol. 5, No. 5, 1955.
3. Majewski, J. T. and Jennings, T.: Obstetrics & Gynecology, Vol. 9, No. 3, 1957.
4. Hardy, E. D.: to be published.
5. Jones, G. S. and Smith, F.: Am. J. Obstet. Gynecol., Vol. 67, No. 3, 628-633, 1954.
6. Jones, Scott S.: Northwest Medicine, Vol. 54, 1253-1254, 1955.



in vivo measurement of LUTREXIN on contracting uterine muscle

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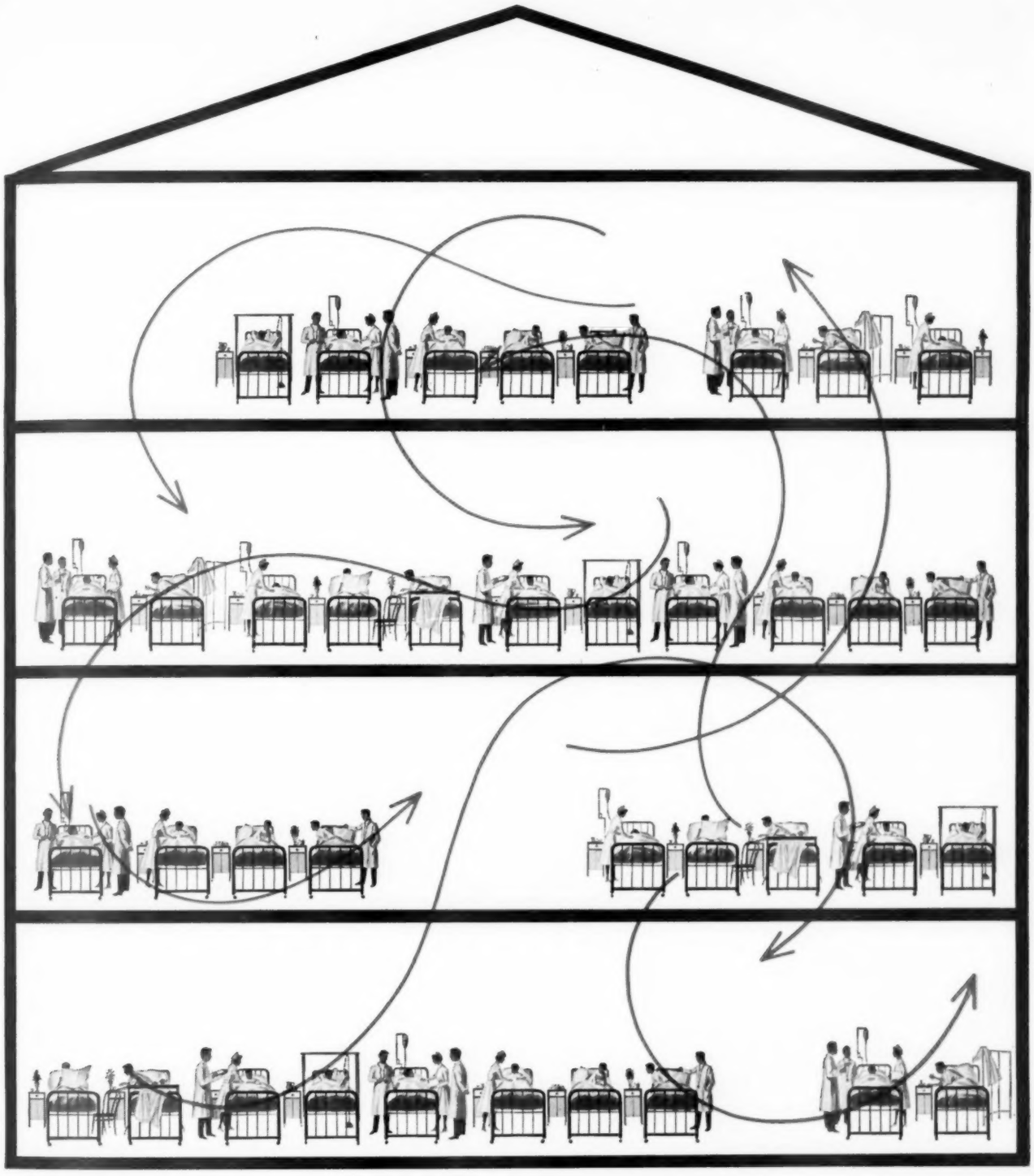

STOP "HOSPITAL STAPH" WITH ALBAMYCIN*

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THE UPJOHN BRAND OF CRYSTALLINE NOVOBIOCIN SODIUM
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Antibiotic-resistant strains of Staphylococcus are meeting their match in Albamycin. Because Albamycin shows no cross resistance with any commonly used antibiotic, it is dramatically effective against unyielding staphylococcal pneumonia or superinfections of pneumococcal pneumonia.

Whether resistant staph is known or suspected, *Albamycin is indicated.*

ADMINISTRATION AND DOSAGE: The dosage for adults is 500 mg. Albamycin administered intramuscularly or intravenously every 12 hours. As soon as the patient's condition permits, parenteral Albamycin should be replaced with oral Albamycin therapy.

SUPPLIED: Available as 250 mg. capsules; syrup containing 125 mg. Albamycin per 5 cc.; and in the 500 mg. Mix-O-Vial.†

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News

1959 A.PH.A. Convention Date Changed

At a meeting of the Council of the American Pharmaceutical Association held in Chicago November 1, the date of the 1959 convention of the Association was changed from the week of April 19 to the week of August 16. *There is no change in the convention city, which is Cincinnati.*

The dates originally selected for the 1959 convention in Cincinnati covered the week beginning April 19. It was found that the Jewish Passover Holidays begin on Wednesday evening, April 22 in 1959, and continue through April 30, and that this would make it impossible for some of our members to attend the meetings scheduled in the latter part of the week.

The Council of the A.Ph.A. also had before it a resolution from the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS requesting that A.Ph.A. conventions be held during the Summer so as to avoid interference with numerous district and local hospital and hospital pharmacy meetings. The American Association of Colleges of Pharmacy has for a number of years requested a return to the Summer conventions because of the inability of many college faculty members and members of the Student Section to attend meetings held in April.

The Council was mindful of the fact that the change from holding conventions in August to holding them in April had been made as the result of a referendum vote of the entire membership several years ago. Therefore, a very careful and elaborate canvass of the situation with respect to other available dates in Cincinnati and elsewhere in April was made and it was found that no other week in April was available and that the only week in May which could be assigned to the Association was the week of May 23. This week, however, would interfere seriously with the attendance of teachers and students of pharmacy and other members of the A.Ph.A. having children at colleges because it is so close to the end of the college term and college commencements. So many other national and state pharmaceutical association conventions are held in May, June and July, that the only solution to the problem which has arisen with respect to the 1959 convention dates was to carry the convention into August. The week of August 16 was selected as the most suitable from the standpoint of meeting and housing facilities.

The tentative program provides for meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, and the National Conference of State Pharmaceutical Association Secretaries early in the convention week, and the American College of Apothecaries during the week. The combined opening exercises of the A.Ph.A. convention and its affiliated and related groups will be held on Sunday evening, August 16. The First General Session will probably be held on the evening of August 18, and meetings of the House of Delegates and the Sections will follow on August 19, 20 and 21. More complete information regarding the convention will become available as arrangements in Cincinnati are completed.

The Committee on Time and Place of Meeting will give serious study to the future schedule and timing of the annual conventions, especially with respect to the 1960 convention which would traditionally come the week in advance of the Decennial U.S.P. convention now scheduled for April 12 and 13, 1960.

NPC Names Woods in Hospital Relations

William E. Woods

WILLIAM E. WOODS, a pharmacist and practicing attorney of Corpus Christi, Texas, has been selected by the National Pharmaceutical Council as an assistant to Executive Vice President Newell Stewart in the field of hospital relations.

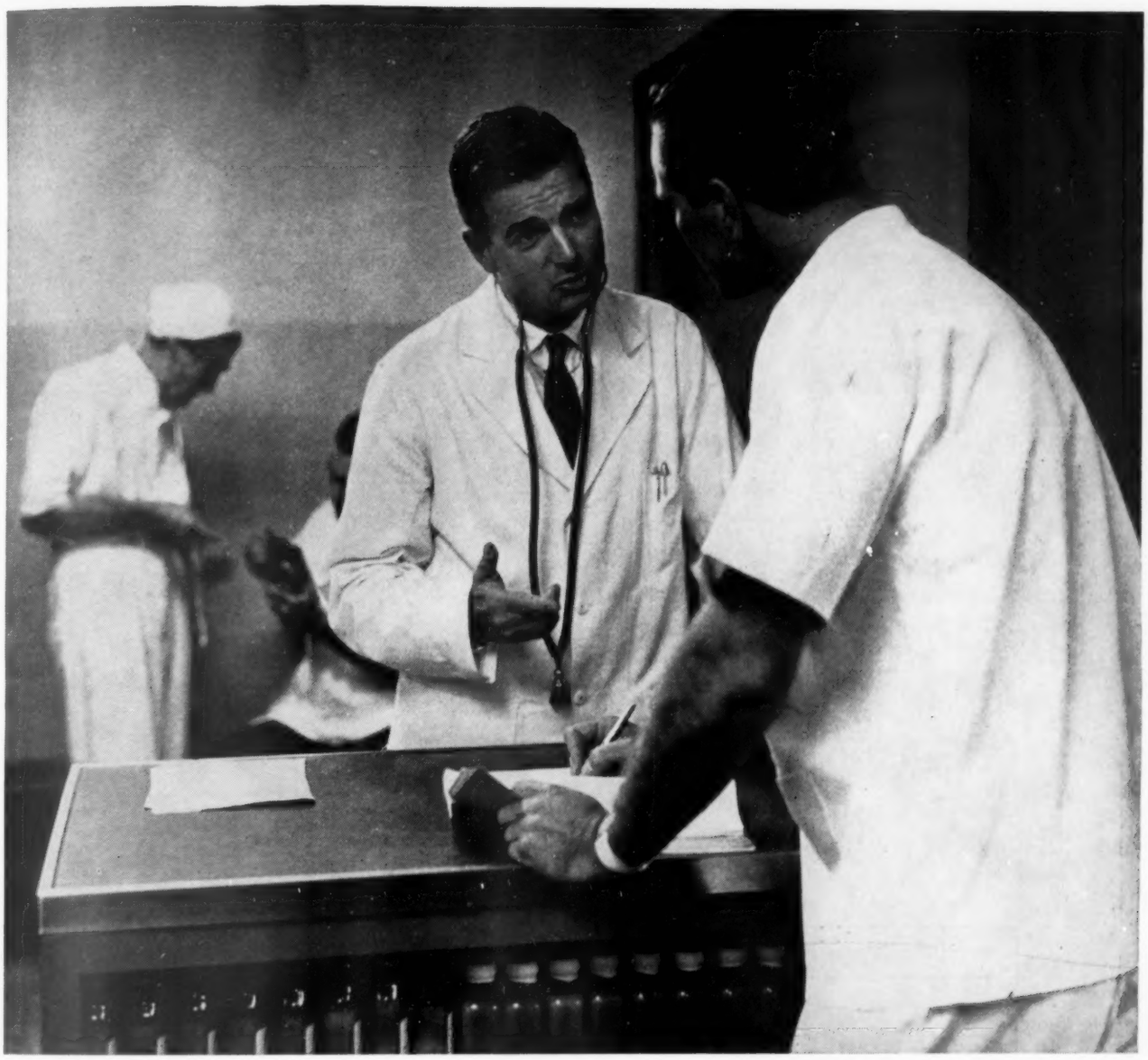
Mr. Woods, a native of Texas, received his elementary and high school education in Ballinger and his B.S. degree in pharmacy from the University of Texas. During his last two years in college he served as Assistant to the Chief Pharmacist in Breckenridge Hospital. Following graduation he managed two large professional pharmacies for four years.

Mr. Woods was employed by the Texas State Health Department in administrative affairs and in making a detailed survey of hospital facilities in Texas after which he went with the U.S. Public Health Service working with the State Health Departments of 18 southeastern states and as Assistant Director of Operations and Chief of Commissioned Officers Unit.

The Pharmaceutical Survey Office employed Mr. Woods to work under Dr. Edward C. Elliott in making a comprehensive survey and analysis of pharmacy legislative controls and boards of pharmacy. He was also employed by Eli Lilly and Company serving in the Marketing Division and as Chief of Procedures Staff of the Production Administration Division for several years.

He enrolled in the University of Texas School of Law and received his LLB degree in 1953 and served as the first Director of the University of Texas Pharmacy Extension Service and also as lecturer in pharmaceutical jurisprudence. Mr. Woods established his private law practice in 1954 in Corpus Christi, Texas, where he has continued to be active in pharmaceutical affairs as General Counsel for the Coastal Bend Pharmaceutical Association.

Mr. Woods is a life member of the A.Ph.A., an associate member of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, a member of the American Bar



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There are a lot of reasons why so many physicians specify Bufferin. For instance, it's *better tolerated* than plain aspirin—many times better tolerated according to one recent study[1] of 236 patients. Therefore, it's the choice when high-dosage or long-term salicylate therapy is indicated. And Bufferin *contains no sodium* —so it's ideal for effective pain relief when the patient's on a low-salt or salt-free diet.

Bufferin makes work easier for the hospital staff too: no stomach upsets to waste nursing time—the fast onset of action means fewer of those "why don't I feel better yet" calls.

And the new 1,000 tablet hospital size bottle of Bufferin means that you can now economically stock this fine analgesic for general hospital and out-patient use. Be sure it's available in your pharmacy.

Each Bufferin tablet combines 5 grains of aspirin with Di-Alminate (Bristol-Myers' name for the exclusive combination of the antacids aluminum glycinate and magnesium carbonate).

1. Sher, D. B.: Aspirin and APC Irritation of the Stomach, Scientific Exhibit, World Congress of Gastroenterology; Washington, D.C., May, 1958.

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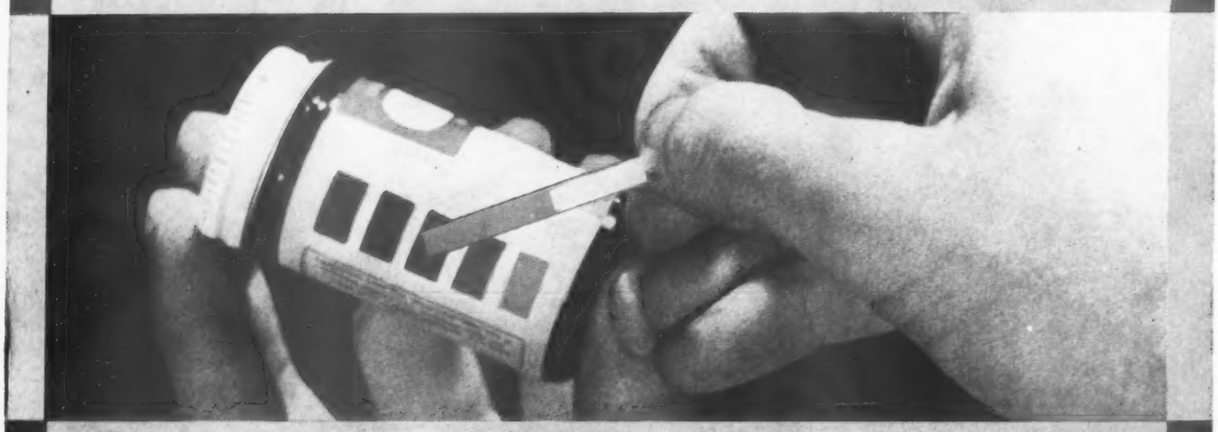
CLINICAL BRIEFS FOR MODERN PRACTICE



is there any correlation between the amount of protein in urine and the grade of heart failure?

Yes. There is a fairly positive correlation.

Source—Race, G. A.; Scheifley, C. H., and Edwards, J. E.: Circulation *13*:329, 1956.

Proteinuria In Cardiac Failure

Grade	Mg. % Protein 0 10 20 30 40 50 60 70 80 90 100
I (31 patients)	8 patients; 23 patients
IV (11 patients)	7 patients; 3 patients; 1 patient

"dip-and-read" tests

adjuncts in Clinical Medicine

ALBUSTIX TRADEMARK Reagent strips for proteinuria

KETOSTIX TRADEMARK Reagent strips for ketonuria

CLINISTIX® BRAND Reagent strips for glycosuria

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Association as well as local and state pharmaceutical and bar associations. He has been most active in community affairs and is presently serving as President of the University of Texas College of Pharmacy Alumni Association and as Vice-Chairman of the Solicitations Commission of the city of Corpus Christi. He has also served as a member of several committees of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

The National Pharmaceutical Council, after several meetings with leaders in hospital pharmacy, has recognized the vital importance of this area of distribution. The selection of Mr. Woods to promote mutual understanding and establish closer liaison between the Council and the hospital pharmacists, administrators and physicians will provide each group with the furtherance of its respective goal of contributing to the benefit of the health of the general public.

► THE OCTOBER ISSUE OF THE *Journal of the American Pharmaceutical Association, Practical Pharmacy Edition,* is a special Hospital Pharmacy Issue. Devoted to several areas affecting hospital pharmacy practice today, the editors have taken note of the changing character of medical practice and the effect this will have on pharmacy in hospitals and medical centers. Articles of particular note include "Hospital Pharmacy and Outpatient Care," by Paul F. Parker, Director of the Division of Hospital Pharmacy of the A.Ph.A. and the ASHP; "Friendly Controversy," by George N. Wagner, Assistant General Sales Manager of Roche Laboratories, Division of Hoffmann-La Roche, Inc.; "Care of the Aged," by Dr. Eric Martin, Editor of the *Journal;* and "State Board Responsibility," by George F. Archambault, Chief of the Pharmacy Branch, Division of Hosiptals, U. S. Public Health Service, Washington, D. C.

► PARKE RICHARDS, JR. has recently been promoted to Director of Sales Operations for Roche Laboratories, Division of Hoffmann-La Roche, Inc. Mr. Richards was formerly Director of Hospital Sales.

► MRS. SAMUEL W. CARLIN, Chief Pharmacist at Paterson General Hospital in Paterson, N. J., heads a team of pharmacists who are available to speak to high school students about pharmacy as a career. This is part of a total program being sponsored by the Passaic County Pharmaceutical Association. Headed by Frank Pinchak, President of the New Jersey Pharmaceutical Association and Director of Public Relations for the Passaic County group, the group has prepared a manual showing a "step by step" procedure used in promoting career guidance for prospective pharmacy students.

► ASHP PRESIDENT ROBERT C. BOGASH and E. BURNS GEIGER of Pfizer Laboratories were interviewed over Radio Station KIRO in Seattle, Wash., on October 11. The interview was held in connection with a Pfizer Seminar at the University of Washington and covered various areas of hospital pharmacy practice.

News

C.H.A. Sponsors Continuing Education Program

The first in a series of Continuing Education Programs in Hospital Pharmacy was held at the Melbourne Hotel in St. Louis on October 13-17. Designed to concentrate on a particular area of interest to the practicing hospital pharmacist, almost the entire program covered the autonomic nervous system with specialists in pharmacology participating. One day was devoted to other areas in hospital pharmacy covering "Management Principles in Hospital Pharmacy," "Public Relations for Hospital Pharmacists," and "Human Relations for Hospital Pharmacists." Also included on the program was a tour of hospital pharmacies in the St. Louis area.

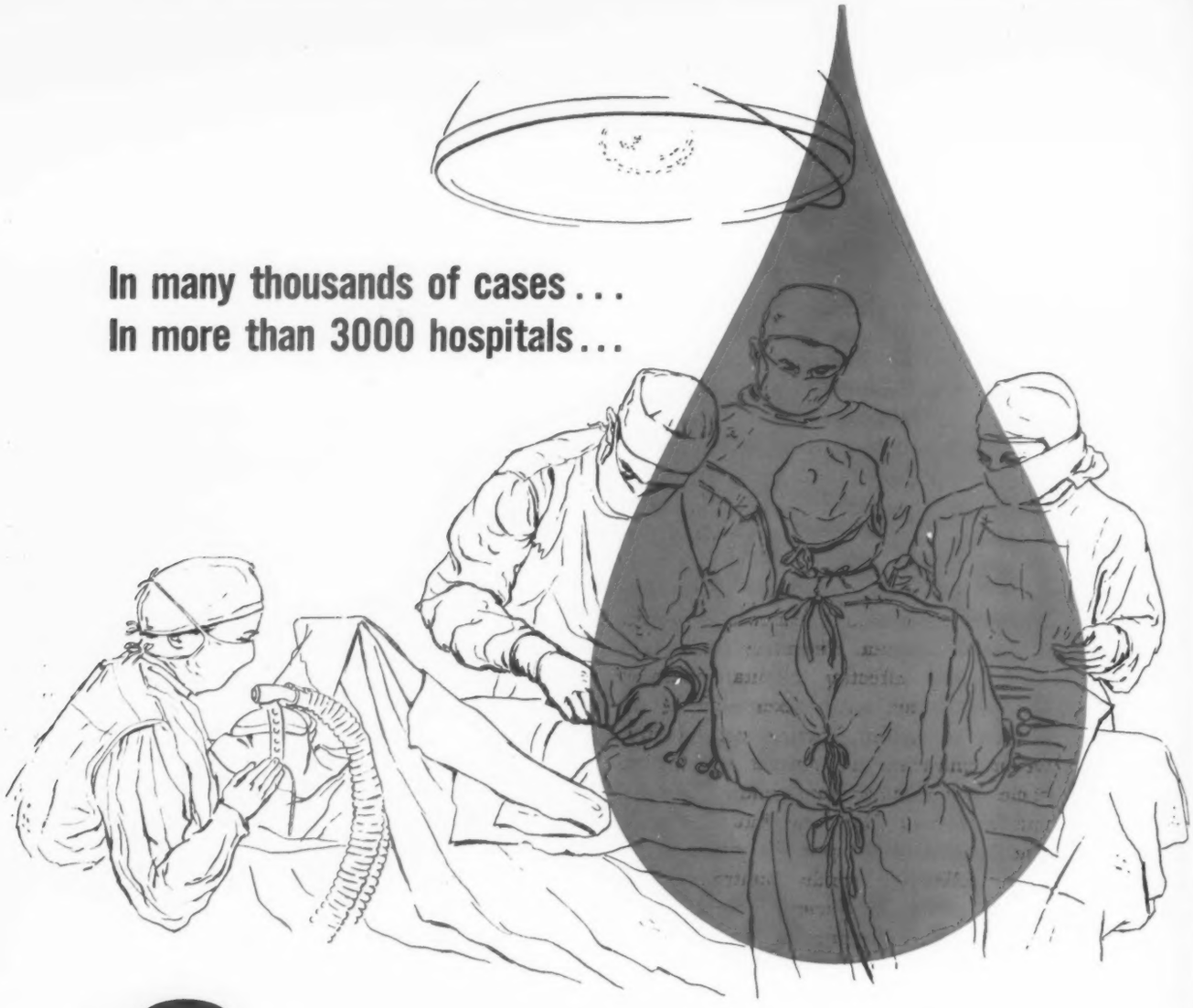
Participants in the five day Continuing Education Program included Dr. Byron A. Barnes, Dr. Leslie I. Eisenbrandt, Dr. Charles A. Walton, Mr. Stephen W. Vasquez, Mr. John Warner, Dr. George F. Archambault, and Mrs. Ann Langley Czerwinski.

The program was in charge of Mr. M. R. Kneifl and Mr. John T. James of the Catholic Hospital Association working with the C.H.A.'s Committee on Hospital Pharmacy Practice. Forty-two hospital pharmacists participated.

Hospital Pharmacy At A.H.A. Convention

An instructural conference entitled "Problem Areas in Hospital Pharmacy," was held at the Annual Convention of the American Hospital Association meeting in Chicago on August 19. With Dr. Robert Cadmus of North Carolina Memorial Hospital serving as chairman of the panel, other participants included Dr. George F. Archambault, U. S. Public Health Service; Dr. Don E. Francke, University Hospital, Ann Arbor, Mich.; Mr. John J. Zugich, University Hospital, Ann Arbor, Michigan; Mr. C. P. Cardwell Jr., Medical College of Virginia, Richmond, Va.; and Mr. Leo F. Goldey, Harris Hospital, Fort Worth, Tex.

Hospital pharmacists were also represented at the Convention with an exhibit sponsored by the Division of Hospital Pharmacy of the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. The exhibit was in charge of Mr. Paul Parker, Director of the Division.



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In more than 3000 hospitals . . .

Adrenosem® effective in the control of bleeding

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Adrenosem Salicylate is unlike any hemostat heretofore available. It has been found useful in almost every branch of medicine and surgery. Case histories have been published on its successful use in such procedures and conditions as:

Tonsillectomy, adenoidectomy and nasopharynx surgery
Prostatic, bladder and transurethral surgery
Excessive postpartum bleeding and uterine bleeding
Thoracic surgery
Gastrointestinal bleeding
Also: Idiopathic purpura
Retinal hemorrhage
Familial telangiectasia
Epistaxis
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Pulmonary bleeding
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Supplied in ampuls, tablets, and as a syrup.

Write for comprehensive illustrated brochure describing the action and uses of Adrenosem Salicylate.

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Public Health Service hospital pharmacists attend training program in Washington. Shown left to right are: Abraham Wolfthal, Baltimore, Md.; Joseph Crisalli, New Orleans, La.; Arthur Dodds, Staten Island, N.Y.; Don E. Francke, Ann Arbor, Mich.; George F. Archambault, Washington, D.C.; Milton Skolaut, Bethesda, Md.; William Dudley, San Francisco, Calif.; Carmen Caratto, Boston; Joseph Salvino, Bethesda, Md.; and William Hanna, Norfolk, Va.

Committee on Historical Records

The Committee on Historical Records has set January 15, 1959, as the date on which all entries will be due in the competition in historical writing for hospital pharmacists conducted by the Committee in collaboration with the American Institute of the History of Pharmacy. This will permit time for evaluation of material and preparation of the awards that are to be presented at the Annual Meeting of the SOCIETY in Cincinnati next August to the two hospital pharmacists submitting the best papers.

Hospital pharmacists are reminded that two types of projects have been suggested as good material to use in the preparation of entries:

1. Manuscripts on historical topics, such as the history of a hospital, of a hospital pharmacy, of a chapter of the ASHP, or some other organized activity, also biographies of outstanding hospital pharmacists either local or national.

2. Collection, identification, and classification of printed and manuscript documents that may be of later use in historical writing concerning hospital pharmacy and which may be on deposit with some library or organization or even in a private collection. If the material itself cannot be submitted, a detailed description of it with a statement concerning the place of deposit should be submitted.

Chapter secretaries and local committees on history of chapters are being encouraged to submit the histories of their chapters.

Papers should be submitted to the chairman of the Committee on Historical Records, Adela Schneider, Southern Pacific Hospital, Houston, Texas.

News

► THEODORE T. TANIGUCHI has been appointed Director of the Hospital Pharmacy Service of the University Hospital at the University of Washington. He will assume his duties on December 1, 1958.

Mr. Taniguchi has been the Chief Pharmacist at the King County Hospital, Seattle, for the past six years. He is a past president of the Washington State Hospital Pharmacists and is the present corresponding secretary of the Puget Sound Branch of the American Pharmaceutical Association.

Mr. Taniguchi served an internship in hospital pharmacy at University Hospital, Ann Arbor, and holds a Master's Degree from the University of Michigan College of Pharmacy.

► FRANZ W. GEISZ has been appointed to the position of assistant chief pharmacist at Springfield City Hospital in Springfield, Ohio. Mr. Geisz received his B.S. and M.S. in hospital pharmacy in 1953 and 1957 from the University of Michigan. He served a hospital pharmacy internship at the University of Michigan Medical Center in Ann Arbor. Prior to his appointment he studied for a short time at the University of Southern California.

AIHP Appeals for Historical Material

An appeal to pharmacists with an interest in history to prepare biographical sketches of prominent pharmacists of their acquaintance, was issued recently by Dr. Glenn Sonnedecker of the American Institute of the History of Pharmacy.

At the same time, Dr. Glenn Sonnedecker, who is Director of the Institute, urged pharmacists to consider preparation of autobiographical material regarding their own careers, including documents and photographs significant of their time.

The Institute expressed two reasons for its suggestions: first, that copies of such autobiographical or biographical sketches be deposited with the Institute for permanent cataloging and filing for reference; and second, the Institute may be in position to suggest to authors journals that might consider such works for publication.

"History is not alone a thing of the past," Dr. Sonnedecker pointed out. "We are living history today. Ten, twenty, or fifty years from now, people will want to know what was done this year, by whom it was done, and the reasons why. No one can supply the basic materials of history so fully and meaningfully as those who have been first-hand observers or participants."

News

"There are many pharmacists today," the Institute's Director explains, "whom we know well, whom we respect, and whose works we admire. But what do we know of their personal lives, their careers, their families, their services to pharmacy, to the nation, and to the communities in which they live? What better time is there to get this information than right now, while these men and women are here, and we can talk to them and consult their records?"

All too often when such pharmacists die we mourn their going, then half forget them in the press of new problems. Eventually their personal effects and photographs are scattered or destroyed, and family members are lost track of. Years later, some historian, trying to reconstruct a period, a biography, or an event, runs into great difficulty. Valuable information sometimes is lost forever. If friends or acquaintances will prepare biographical material, photos and the like, while the person is alive, and deposit copies with the Institute, it will be preserved for all time for future historians.

Dr. Sonnedecker also urged prominent pharmacists to put aside feelings of false modesty and to prepare brief, factual autobiographies, with photos and supporting material, to be filed with the Institute.

"You have not hesitated to give time, energy and money, to serve your fellow men," the historian said. "Now, do them, and future generations, one further service—write into the record the facts concerning your life and your activities, so there may be a clear and cumulative picture for the profile of your profession, several decades from now."

To those persons who would like to prepare biographical and historical material, but "just don't know how to go about it." Dr. Sonnedecker stated that, on request, the Institute will endeavor to offer advice and guidance that will be of assistance in the development of worthy contributions to the living record of pharmacy's progress.

Correspondence should be addressed to:
American Institute of the History of Pharmacy
356 Chemistry Building
Madison 6, Wisconsin

► OSCAR J. ROGERS, Chief Pharmacist at the Rowan Memorial Hospital in Salisbury, N. C., set up a special exhibit on "Hospital Careers" at the Rowan County Fair in September. The exhibit was well attended and

Satisfied with the usual cough remedies?

—do you find that the local soothing effect of cough syrups is not enough?
—are you concerned about the side effects of codeine?
—do you find that many remedies decrease cough productivity?
—do you have patients who do not cooperate fully because of cumbersome forms of issue and too frequent dosage?

CIBA
SUMMIT, N. J.

included attractive material relating to hospital pharmacy.

► I. T. REAMER of Duke Hospital Pharmacy, Durham, N. C., represented hospital pharmacy in a T.V. panel sponsored by the Durham Junior Chamber of Commerce on October 4. Dean Edward Brecht of the University of North Carolina School of Pharmacy represented education and Ralph Rogers, Jr. represented retail pharmacy while David McGowan, a professional service representative of Eli Lilly, represented manufacturing pharmacy. Russell Jordan, Assistant Superintendent of Duke Hospital, moderated this program.

Chart Shows Antimicrobial Agents

A wall chart giving an up-to-date listing of antimicrobial agents by both generic and tradenames with their manufacturers and microbial derivation has been made available to laboratory workers by Baltimore Biological Laboratory, Inc.

The free chart is designed to help laboratory personnel with the complex nomenclature often associated with the newer antimicrobial agents. The chart also serves as a guide for *in vitro* bacterial susceptibility testing with sensitivity discs by listing the appropriate catalogue and code number of the BBL Sensi-Disc for the various agents.

The chart, printed attractively on glossy stock, measures 21¾" long by 17" wide—a convenient size for placing over a desk or work bench for quick reference.

Copies of the chart may be obtained by writing Baltimore Biological Laboratory Sales Office, c/o Becton, Dickinson and Company, Rutherford, New Jersey.

Baltimore Biological Laboratory, Inc. is a division of Becton, Dickinson and Company.

► DR. WILLIAM HELLER, Chief Pharmacist at University of Arkansas Medical Center, Little Rock, has recently been appointed to the Committee of Revision of the United States Pharmacopeia. Dr. Heller is Chairman of the ASHP Committee on Pharmacy and Pharmaceuticals and Director of the American Hospital Formulary Service. Another new appointment to the U. S. P. Committee of Revision is Professor Mitchell J. Stoklosa of Massachusetts College of Pharmacy, Boston. Both appointments are for the remainder of the decade.

► ASHP PRESIDENT ROBERT C. BOGASH participated in a Ciba Refresher Seminar at the Barbizon-Plaza in New York City on September 9.

If not... here's why you should try new Tessalon Perles

- controls cough by dual action—in the chest as well as at cough centers of the brain.
- 2½ times as effective as codeine[1] without the side effects of codeine.
- controls cough frequency without decreasing productivity or expectoration.
- Perles offer convenient, precise dosage and relief for 3 to 8 hours.

AVERAGE ADULT DOSAGE: 100 mg. t.i.d.
In refractory cough, up to 6 perles (600 mg.) a day may be given.
AVERAGE DOSAGE FOR CHILDREN UNDER 10:
One Pediatric Perle (50 mg.) t.i.d.
SUPPLIED: TESSALON *Perles*, 100 mg. (yellow).
Pediatric Perles, 50 mg. (red).
Pediatric Perles available Oct. 1, 1958.

1. Shane, S. J., Krzyski, T. K., and Copp, S. E.: Canad. M.A.J. 77:600 (Sept. 15) 1957.

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25,000,000 courses of treatment— and NO "resistance" problems

*Conservative estimate based on combined use of all FURACIN preparations since 1945.

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In clinical use for more than 12 years and today the most widely prescribed single topical antibacterial, FURACIN—like other nitrofurans—remains effective against pathogens which have developed, or are prone to develop, resistance to other antibacterial agents. There has been no evidence that originally sensitive strains of staphylococci or other bacteria lose their susceptibility to FURACIN in any significant degree.

the wide-spectrum antibacterial exclusively for topical use ... in dosage forms for every topical need

Available as Soluble Dressing, Soluble Powder, or Solution. Also in Vaginal and Urethral Suppositories and in special formulations for eye, ear and nose.

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Greater New York Chapter

Members of the Greater New York Chapter of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS met at St. Peter's Hospital in Brooklyn on Tuesday, October 14 at 2:30 p.m. Announcement was made regarding two new members, Sister Marie Antonita, O.P. of Mary Immaculate Hospital in Jamaica, and Sister Joan Mary, D. W. of Good Samaritan Hospital in West Islip.

During the business session announcements were made regarding the work of the representatives of hospital pharmacy groups in New York who are meeting with the State Board of Pharmacy. It was noted that Mr. Louis Jeffrey of Albany Hospital, Albany, and Mr. Robert Bogash of Lenox Hill Hospital, New York City, were chosen to represent hospital pharmacy. All of the hospital pharmacy organizations in New York will contribute to the work and Sister Mary Etheldreda will prepare material to be presented by the Greater New York Chapter. Sister Etheldreda will be assisted by Sister Nicodema, Sister Jeanette and Sister Donatus.

Note was made of the October issue of the *Journal of the American Pharmaceutical Association* which was dedicated to hospital pharmacy and Sister Rose Dominici was asked to write to the Association to express appreciation of the members of the Greater New York Chapter.

North Carolina Society

The North Carolina Society of Hospital Pharmacists met for the fall meeting on Saturday, October 18 at Watts Hospital in Durham, N. C. Mr. Gerald Stahl, Chief Pharmacist, was host to the group for dinner at 6:00 p.m. in the hospital dining room. The featured speaker of the evening was Dr. Robert Cadmus, Administrator of the North Carolina Memorial Hospital in Chapel Hill. Dr. Cadmus spoke on "How Can Pharmacy Service Be Provided to Those Hospitals in our Communities Which Have No Pharmacist or Pharmacy Department?" Mr. E. W. Rollins from the North Carolina Baptist Hospital in Winston-Salem presided. Three distinguished visitors at the meeting were Mr. Edward Superstine of the Metropolitan Hospital in Detroit, Dean Edward Brecht of the University of North Carolina School of Pharmacy, and Mr. H. C. McAllister, Secretary of the North Carolina Board of Pharmacy. There were approximately forty people in attendance.

Southern Appalachian Society

Members of the Southern Appalachian Society of Hospital Pharmacists, a recent affiliate of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, met at the Miner's Memorial Hospital in Williamson, W. Va., Sunday, September 7 at 3:30 p.m. It was announced that the official request for affiliation was being made to the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS and the Executive Committee of the national group would consider this at a forthcoming meeting.

The September meeting was devoted to "Poison Control Center Project," with Mr. Hyman Verbofsky speaking. His remarks centered about the many Poison Control Centers that are now established all over the United States. He pointed out the ways in which this idea has been given impetus through the interest and cooperation of many of the universities. Also pharmaceutical manufacturers have distributed valuable pamphlets and charts, listing poisons with their antidotes. At the conclusion of his remarks, he distributed several pamphlets which contain a listing of poison antidotes, and other pertinent information on this subject.

In commenting on the project, as outlined by Mr. Verbofsky, President Nollau asked that each hospital pharmacist make a survey at his respective hospital, and report at the next meeting on the facilities available for treating poison cases; also, he asked for suggestions for improving this service. Mr. Robert Shirey reported that there is a definite Poison Antidote Control Set-Up now in active use in each of the Miner's Memorial Hospitals.

A meeting of the Southern Appalachian Society was also scheduled for October 26 at the Charleston General Hospital, Charleston, W. Va.

Florida Society

At the November meeting of the Florida Society of Hospital Pharmacists, Mr. Allen Ford, Chief Pharmacist at Baptist Memorial Hospital in Jacksonville, became President. Business transacted during the meeting was concerned with revision of the Constitution and By-Laws and a membership program.

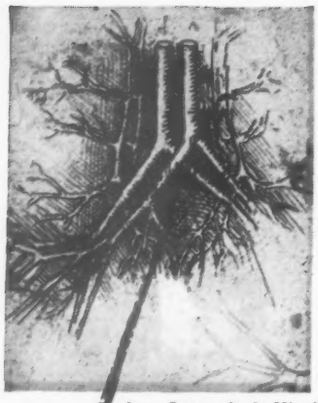
Michigan Society

Approximately 40 members of the Michigan Society of Hospital Pharmacists met at University Hospital in Ann Arbor on Thursday, October 30. Highlighting the meeting was a panel discussion on "Decentralization of Inpatient Dispensing," which was moderated by Mr. James Allaben, an intern in hospital pharmacy. Other panelists included Lt. Douglas Silvernale, Capt. Gordon Moore, Capt. Lewis Miner, and Mr. John Oliver, all pharmacy interns at University Hospital. The panel was divided into two sides, one a proponent of decentralization of inpatient dispensing and the other side pointing out the disadvantages.

During the business session, the Michigan Society approved presentation of a plaque commemorating the late Harvey A. K. Whitney to the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS at the Annual Meeting in Cincinnati. It was noted that a similar gesture is being carried out by the Ohio Society of Hospital Pharmacists in honor of the late Dean Edward Spease. Other business transacted during the meeting included announcements of plans for the coming year with particular comment regarding the forthcoming Seminar which is scheduled in Detroit on November 22. Membership activities were noted and the current campaign which is being carried out by the national organization is also being coordinated in the local areas and President Superstine pointed out that the Michigan Society is making every effort to bring all hospital pharmacists in the area into the national organizations as well as into the Michigan Society.

New Jersey Society

The New Jersey Society of Hospital Pharmacists sponsored its first hospital pharmacy seminar jointly with the Pfizer Laboratories in cooperation with the Rutgers University



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College of Pharmacy at Rutgers University Commons, New Brunswick, on Saturday, September 27, 1958. Participants in the program included Sister Marian, President, New Jersey Society of Hospital Pharmacists; Dean Roy A. Bowers, Rutgers University College of Pharmacy; Mr. Louis Gdalman, Director of Pharmacy Services, Presbyterian-St. Luke's Hospitals, Chicago, Ill.; Mr. Paul Parker, Director of the Division of Hospital Pharmacy, American Pharmaceutical Association, Washington, D.C.; Dr. Joseph Campo, Assistant Professor of Pharmaceutical Chemistry, Rutgers University College of Pharmacy; Mr. Joseph V. Terenzio, Executive Director, Knickerbocker Hospital, New York City; Mr. Robert Bogash, President of the American Society of Hospital Pharmacists and Director of Pharmacy at Lenox Hill Hospital, New York City; Mr. E. Burns Geiger, Director of Promotions, Pfizer Laboratories, Brooklyn, N. Y.; and Mrs. Florence Sena Frick, Secretary of the New Jersey Society of Hospital Pharmacists, who was the Seminar Moderator.

Following the central theme, "The Economics and Advances in the Administration of the Hospital Pharmacy for Efficient Operation for the Benefit of all Hospitals to Provide the Best Patient Care," the discussions covered new trends in organization and administration with note being made of the economics of hospital pharmacy practice.

The New Jersey Society of Hospital Pharmacists also held a dinner dance on October 25. It was attended by over 250, including hospital pharmacists and friends of industry. The proceeds will be used to start a benefit scholarship fund. The guest speaker was Dr. Roy A. Bowers, Dean of Rutgers University College of Pharmacy. Other guests present were Dr. John Voigt, Rutgers University Extension Service; Mr. Louis E. Kazin, Associate Editor of *Drug Topics;* and Mr. William H. McNiell, President Emeritus of the New Jersey Pharmaceutical Association, who is also one of the first hospital pharmacists in the state of New Jersey.

Southern California Society

Members of the Southern California Society of Hospital Pharmacists met at the Hotel Laguna in Laguna Beach on Sunday, September 14, for a joint meeting with the San Diego Chapter of the American Society of Hospital Pharmacists. Following a dinner, President of the Southern California Society, Joseph H. Beckerman, called the meeting to order. All members were introduced and the group was welcomed jointly by Lt. Clifton Ashe, President of the San Diego Chapter and Mr. Beckerman. Following the business session, Professor Edward Brady of the University of Southern California School of Pharmacy spoke.

Due to the success of the meeting, it was agreed that a joint meeting of the Southern California Society and the San Diego Chapter should be held annually.

Approximately 60 members and guests of the Southern California Society met on October 8 in the office of the Upjohn Company in Los Angeles. President Joseph Beckerman opened the meeting by introducing Mr. E. V. Lindstrom, Sales Manager of the Upjohn Company, Los Angeles Branch. Mr. Lindstrom gave the Society a warm welcome, offering the facilities of the company as the group desired.

Business covered during the meeting included the Treasurer's Report, a report on membership showing that there are now 144 paid members of the Southern California Society of Hospital Pharmacists, nominations for offices for the coming year, and announcement of the forthcoming Pfizer Seminar scheduled for October 25.

Included on the program was a report on the meeting of the International Pharmaceutical Federation held in Brussels in September. The report was given by Miss Nellie Nigro who also showed slides taken throughout Europe.

President Beckerman stressed the importance of the Chapter's participation in the work of the Committee on Safety Practices and Procedures and offered a tape recording which can be used for nurses in hospitals. Announcement was also made with regard to the work of the Committee on Minimum Standards and the appeal to affiliated chapters for assistance.

Also included on the program was a film entitled "Current Therapy of Diabetes," made available from the Upjohn Company.

Cleveland Society

The regular meeting of the Cleveland Society of Hospital Pharmacists was held September 24 at 8:00 p.m. at the County Coroner's Office located at 2121 Adelbert Road in Cleveland. Prior to the meeting, members of the Society had dinner together at the Aurora Restaurant, through the courtesy of Ciba.

The President first introduced the speaker of the evening, Dr. Lester Adelson, who gave an iteresting dissertation on the operation of the coroner's office along with the duties and obligations of the coroner. Members enioyed a tour of the office, following with a period of questions and answers led by Dr. Adelson.

The business meeting followed with the president first expressing appreciation to Ciba for the enjoyable dinner. Introduction of officers of the Society and guests followed.

Announcement was made during the meeting of a proposed course for pharmacy technicians in hospitals. The report of the proposed curriculum was read by Mr. Henry Szymczyk. The subject was discussed but no action taken.

Also covered during the meeting was the newly proposed Blue Cross plan which was introduced by the President. Under the new plan, a maximum of two weeks' medication will be provided to the hospital private patient upon discharge. After discussion, a vote was taken and the Cleveland Society unanimously opposed the new p'an. A motion was made and carried that the Secretary send a letter to the Cleveland Academy of Pharmacy pointing out the reason why the Cleveland Society opposed the proposed plan.

Announcements were made and it was noted that President of the ASHP, Mr. Robert Bogash, was scheduled as a speaker for the October meeting.

Colorado Society

The first meeting of the year was held on Tuesday, September 16, at the National Jewish Hospital in Denver. President Samuel Kohen opened the meeting and announced that the Constitution of the Colorado Society of Hospital Pharmacists had been referred to the national organization for approval of the group as an affiliate.

During the business session, proposed legislation with which the Colorado Society is concerned was discussed. Announcements were made regarding a Seminar scheduled for November 8, plans for hospital day during the coming year, and a proposal for publication of a journal.

Visitors at the September meeting included Mrs. Nellie Vanderlinden and Miss Sharon Crook of Salt Lake City who reported on the work of the Utah Society of Hospital Pharmacists.

Also reporting during the meeting was Mr. Himat Mehta, an instructor at the University of Colorado, who told about the Institute in Chicago which he attended.

Rhode Island Society

The regular bimonthly meeting of the Rhode Island Society of Hospital Pharmacists was held on March 19, 1958 at 7:30 p.m. at Twin Oaks. Prior to the meeting, there was a Dutch treat dinner. The theme of the meeting, "Pharma-

cology in Relation to the Therapeutics Committee," was discussed by Dr. James Inashima, head of the Department of Pharmacology at New England College of Pharmacy. He strongly emphasized that through pharmacology the hospital pharmacist can advance the pharmacy profession. The categories of drugs evaluated included: (1) histamine and antihistamines; (2) chemical relationships of some neurohormones, psychotomimetic agents, and some tranquilizing agents; (3) chemical classification of tranquilizing agents and agents used in medicine chemically related to these substances.

President Giardino read the letter sent to Dean Heber W. Youngken Jr. granting to the College of Pharmacy University of Rhode Island a $50.00 prize to be awarded to the senior student excelling in the dispensing pharmacy course. The members requested that this be given in honor of the late Victor Canaipi.

There was considerable discussion on the modern concept of the hospital health team and the significance of gaining recognition by the Hospital Association of Rhode Island. It was the general sense of the members that representatives of hospital administration and hospital pharmacy should meet together in the interest of better understanding of the problems of each. Continuing the discussion, it was felt that through mutual understanding and better teamwork with other departments in the hospital, much can be contributed toward a better hospital and better patient care.

Nebraska Society

The Nebraska Society of Hospital Pharmacists' Fall meeting was held in conjunction with the Nebraska Hospital Association's Annual Convention at the Sheraton-Fontenelle Hotel in Omaha October 24, 1958. The program consisted of two lectures in the morning, and a panel discussion in the afternoon, as follows:

"The Chemotherapy of the Leukemias," by Payton T. Pratt, M. D.

"Intravenous Fluids, Equipment and the Pharmacy," by C. H. Moore.

"The Multiple Dose vs. the Single Dose Disposal Injection," moderated by Frank J. Franco. Panel members included Lillian Dorsey, Sister Mary Carmelia, and Leona Crowley.

The film "Milestones of Progress," presented by Wyeth Laboratories, followed.

A short business meeting was held after the program. A motion was made and carried that the Society conduct a membership drive, and that a dinner meeting be held in conjunction with this drive. Members of the committee are Kyle Taylor, Chairman, Bob Conner, Frank Franco, and Jerry Mahoney.

President Frank Franco presented letters from the two deans of the Pharmacy Colleges (Creighton, and University of Nebraska) each of which acknowledged receipt of a $25.00 check for a scholarship fund.

Northern California Society

Members of the Northern California Society of Hospital Pharmacists met at the University of California Hospital in San Francisco on October 14.

Stanley Marincik, Chief Pharmacist at University of California Hospital, introduced the guest speaker, Dr. Thomas Burbridge, Associate Professor of Pharmacology at the University of California Medical School.

Dr. Burbridge talked on his experiences in Indonesia, where he spent several years as a member of the University of California Medical Field Staff. He presented a description of Indonesia's land and sea areas, its people, and its many cultural and religious backgrounds. The project of the Uni-

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versity of California Medical Field Staff which sent him to Indonesia was to develop the medical campus at the main university and to train teachers for other Indonesia medical schools. Following his talk, Dr. Burbridge presented slides he had taken of Indonesia. A question and answer period followed.

Business covered during the meeting included nominations for officers, a proposed workshop on the Minimum Standard for Pharmacies in Hospitals which is scheduled at the November meeting, announcements, and introduction of new members.

Ohio Society

The Ohio Society of Hospital Pharmacists met at Mercy Hospital in Toledo on October 15. Sister Mary John, Chief Pharmacist, acted as hostess for the meeting. Following a welcome by Mr. Jack Smittle, President of the Ohio Society of Hospital Pharmacists, and Mrs. Theodorsia Tucker, President of the Toledo Society, the following papers were presented:

"The Use of Hypnosis in Medicine," by Dr. C. J. A. Paule, Superintendent of Bureau of Preventative Medicine and Adult Health at the Toledo Board of Health.

"Revision of Minimum Standards in Hospital Pharmacy," by Sister Mary John, Chief Pharmacist at Mercy Hospital, Toledo.

"The Relationship Between Prescription Manufacturing and Hospital Pharmacy," by Dr. Robert A. Hardt, President of Armour Pharmaceutical Company, Kankakee, Ill.

"Service Improvements in Dispensing," by Robert C. Bogash, Director of Pharmacy Department at Lenox Hill Hospital, New York City.

"The Administrative Viewpoint on Hospital Pharmacy Services," by John J. Zugich, Assistant Director, University Hospital, Ann Arbor, Mich.

At the luncheon meeting, Dr. Don Francke, Director of Pharmacy Service at University Hospital, Ann Arbor, Michigan, presented a report of the meeting of the International Pharmaceutical Federation recently held in Brussels, Belgium. Also Mrs. Gloria Francke, Secretary of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, spoke on the Internation Exposition also held in Brussels this year and attended by those who participated in the meeting of the International Pharmaceutical Federation.

Arrangements for the meeting were in charge of Marilynn K. Fulton, *Chairman*, Parkview Hospital; Emma Arvan, Toledo Hospital; Iris Hollman, Flower Hospital; Violet Koroloff, Toledo Hospital; Sister Mary John, Mercy Hospital; Marie McClure, St. Luke's Hospital; Ann Stanifer, Monroe General Hospital; and Theodorsia Tucker, Mercy Hospital.

Dade County Society

The Dade County (Miami, Florida) Society of Hospital Pharmacists held a Seminar in cooperation with Pfizer Laboratories on October 4. Principal speakers included Mr. Paul Parker, Director of the Division of Hospital Pharmacy of the A.Ph.A. and the ASHP and Dr. Warren McConnell of the J. Hillis Miller Health Center in Gainesville, Fla. Also included on the program was a discussion on cooperation between nurses and pharmacists by Miss Mary Wernersbach, Chief Pharmacist, Mt. Sinai Hospital in Miami Beach and a discussion of "Effective Communications," by Mr. E. Burns Geiger of Pfizer Laboratories. Greetings from the local group were presented by Miss Eleanor Moran, Vice-President of the Dade County Society. All hospital pharmacists in Florida were asked to participate.

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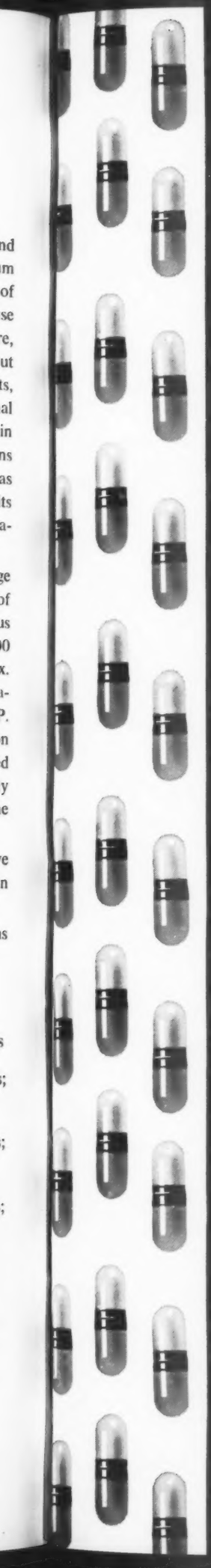

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1. Hunter, J.A., et al.: Hosp. Management 81:82 (March) 1956, 81:80 (April) 1956, 83:86 (March) 1957. Reprints are available from your Wyeth Territory Manager or write Wyeth, P.O. Box 8299, Philadelphia 1, Pa.

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Drug-induced psychophysiologic depression; physiologic after-effects of certain anesthetics; barbiturate intoxication; moribund states due to systemic infection. (All patients were epileptic, mentally retarded and/or brain damaged.)	"All except two [of 129] patients responded to the initial injection [of parenteral Ritalin] within 1½ to 15 minutes."	"In no instance was there any evidence of untoward effects." ". . . the very poor basic physical condition of our patients in this study, those associated with profound chronic brain damage, accentuates the safety of parenteral Ritalin . . ."[3]

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REFERENCES: 1. Natenshon, A. I.: Dis. Nerv. System *17*:392 (Dec.) 1956. 2. Landman, M. E., Preisig, R., and Perlman, M.: J. M. Soc. New Jersey *55*:55 (Feb.) 1958. 3. Carter, C. H., and Maley, M. C.: Dis. Nerv. System *18*:146 (April) 1957.

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Dear Sirs:

Appreciates Journal

DEAR SIRS: I would appreciate information concerning the possibility of purchasing back issues of the JOURNAL . . .

The JOURNAL is a priceless reference source and I would like to congratulate the entire staff on the splendid job they are doing for the profession.

PHILBROOK H. KNIGHT, *Pharmacist*
U. S. Public Health Service Hospital
San Francisco, California

EDITOR'S NOTE: Back issues of the JOURNAL (formerly *The Bulletin of the American Society of Hospital Pharmacists*) are available through the Division of Hospital Pharmacy, 2215 Constitution Ave., N.W., Washington 7, D. C. In general, complete volumes can be supplied beginning with 1950. Prior to that time, some issues are entirely depleted and therefore volumes cannot be made up.

Interested in Formulary Service

DEAR SIRS: . . . our assistant director has just returned from the Convention of the American Hospital Association in Chicago and he has told me of his pleasant visit at the booth sponsored by the Division of Hospital Pharmacy of the A.Ph.A. and ASHP and the interesting conversation regarding the Formulary System . . .

. . . our hospital will use the Formulary Service and we have had a very active Pharmacy and Therapeutics Committee since 1949.

CHARLES BARNETT, *Chief Pharmacist*
St. Luke's Hospital Association
Jacksonville, Florida

Comments on Presentation of Articles

DEAR SIRS: . . . my article in the September issue of the JOURNAL was certainly well presented. I sincerely appreciated the extensive work on the part of you and your staff in preparing this article for publication.

FRANK W. HOLLISTER, *Pharmacist*
U. S. Public Health Service Hospital
New Orleans, Louisiana

DEAR SIRS: I should like to express to you my appreciation for the fine layout on the recent article entitled "A Simple Method of Facilitating Communication Between Medical Service Representatives and Physicians" which appeared in the AMERICAN JOURNAL OF HOSPITAL PHARMACY. I appreciate your interest and cooperation.

LOUIS P. JEFFREY, *Pharmacist-in-Chief*
Albany Hospital
Albany, New York

From A.H.A. President

DEAR SIRS: Thank you very much for the copy of the resolution adopted at the 1958 Annual Meeting of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

TOL TERRELL, *President*
American Hospital Association
Chicago, Illinois

Color Chart for Tablets

DEAR SIRS: Would it be possible to ask the large drug firms to put out a color chart of their tablets and capsules showing exact size and color each year?

Parke, Davis has done this with Kapseals and it helps a lot.

I. THOMAS REAMER, *Chief Pharmacist*
Duke Hosiptal
Durham, N. C.

American Hospital Formulary Service

DEAR SIRS: Our hospital is interested in the *American Hospital Formulary Service*. Would you tell us if this formulary is now in print and whether or not we may be able to obtain it?

E. LYDECKER, M.D.
Hospital Formulary Committee
Chilton Memorial Hospital
Pompton Plains, N. J.

EDITOR'S NOTE: *The American Hospital Formulary Service* will be available in January, 1959. Additional information on the Formulary will be found in the June issue of the JOURNAL, page 485.

Sulfachrysoidine

DEAR SIRS: Could you please give me a source of supply for a chemical, Sulfachrysoidine, if possible?

Reference to this was made in an article by Vasilieva, in *Vestnik, Otorinolaringologa* (Russian), 5:102-108 (1957), to be used in a preparation for nose bleed.

HOWARD FRANK, *Chief Pharmacist*
Grasslands Hospital
Valhalla, New York

EDITOR'S NOTE: If anyone has information on this drug, please contact Mr. Howard Frank at the above address.

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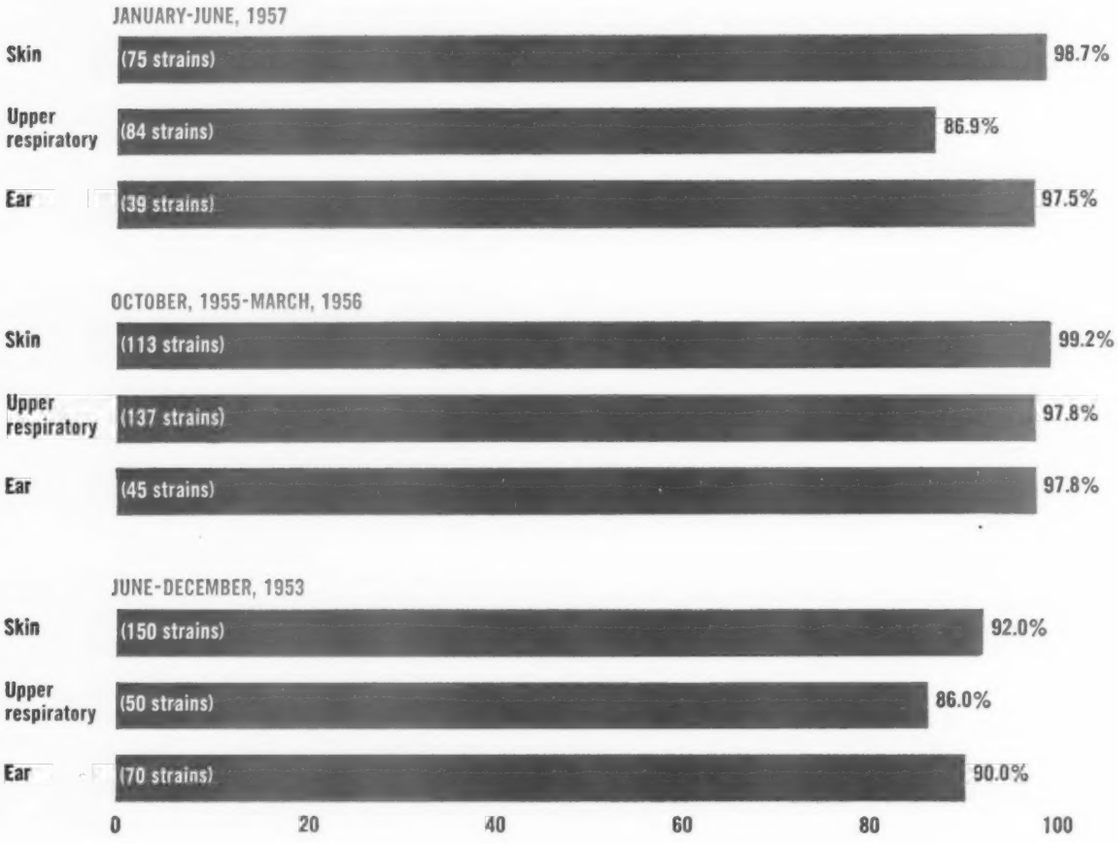

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editorial

by DON E. FRANCKE

International Pharmaceutical Abstracts

► PHARMACY LACKS A COMPREHENSIVE ABSTRACTING service. As a result, its practitioners in all lands are greatly handicapped and must search a large number of journals to keep abreast of developments in the profession. Teachers of pharmacy and research workers are at a particular disadvantage since lack of knowledge of work done by others leads to blind duplication of effort and failure to utilize new methodology. The scholar's leisured pace can no longer cope with the enormous mass of material published in hundreds of journals written in many languages.

To fill the need for a comprehensive abstracting service for pharmacy, the International Pharmaceutical Federation has appointed a Commission on Pharmaceutical Abstracts to investigate all aspects of the problems involved and to present a workable plan for the production and distribution of pharmaceutical abstracts. It is the hope of the Commission that a preliminary report of its findings may be presented at the meeting of the Council of the International Pharmaceutical Federation in Madrid in September 1959, and that an acceptable final report may be adopted at the General Assembly of the Federation in Copenhagen in 1960. If this schedule is followed, the first issue of International Pharmaceutical Abstracts should appear in January 1961.

All will not be smooth sailing, however. The task of producing and distributing pharmaceutical abstracts presents numerous problems. Foremost among these is the financial one. Abstracts are costly to produce; for example, each abstract published may be expected to cost from $3.00 to $5.00. Thus, in a comprehensive abstract service, the total budget required reaches a significant sum. While an abstract service may reasonably be expected to be self-supporting once it is well established, it is always difficult to muster sufficient resources to make a beginning. Thus, it would appear that the greatest need initially is for some pharmaceutical organization to make its resources available in order to get the job underway.

Such an organization must be well-staffed and its staff must have had extensive experience in producing pharmaceutical publications. But perhaps more important, the pharmaceutical organization itself must be animated by a desire to offer services to pharmacy which extend beyond the needs of its own members. This calls for an unselfish and altruistic attitude and a willingness to take a small, or even a large risk if success may result in a significant contribution to the profession at large.

One of the characteristics of every profession is that it have a significant literature. Pharmacy possesses such a body of knowledge but lacks an abstract service to make its literature more useful to its practitioners and others in related fields. Filling this void will result in enhancement of the appreciation and utilization of pharmacy's contributions to knowledge.

There is a particular need for abstracts in the area of what may be called, for lack of a better term, pure pharmacy. Other abstract journals, particularly those in the field of chemistry, do report pharmaceutical publications of a chemical nature. On the other hand, it has been estimated that approximately 30 percent of articles of pharmaceutical interest are not published in abstract journals. Thus, the initial efforts of those responsible for International Pharmaceutical Abstracts will be directed toward developing a program for promptly obtaining, classifying, indexing, publishing, and distributing abstracts of pharmaceutical interest, with special emphasis on subject matter which is not now included by other abstracting services.

At the same time, efforts will be made to make the abstract service more comprehensive so that, eventually, International Pharmaceutical Abstracts may truly not only reflect the contributions of pharmacy but also bring to pharmacists useful knowledge of contributions by others in related fields. This raises the question of duplication and overlapping of abstracts. Duplication of effort in producing abstracts should be avoided. It is common practice for abstracting services to exchange abstracts which are of interest to subscribers of each service and duplication of effort can be avoided in this way. Overlapping in preparing abstracts is, in itself, not an undesirable practice. Thus, an article containing information of both a chemical and pharmaceutical nature may be abstracted in a chemical abstract journal with emphasis on the chemical information while the pharmaceutical abstract journal would emphasize the pharmaceutical information without neglecting the chemical.

Although the task is not an easy one, publication of International Pharmaceutical Abstracts will be a significant contribution to pharmacy and its practitioners.

A

some considerations in the preparation and publication of PHARMACEUTICAL ABSTRACTS

by DON E. FRANCKE

► THE WRITTEN WORD IS UNIVERSALLY RECOGNIZED AS THE MAJOR SOURCE of man's knowledge. But utilization of the written word presents formidable problems and it is because of these problems that we are holding this joint meeting today. We need to discuss means by which this great complex mass of written material, recorded in a significantly large number of languages in literally thousands of journals, may be classified and organized in such a manner that a utilizable quantity may be (1) disseminated to those interested and (2) preserved in such a well organized manner that it may be found readily again when one wishes to use it. Thus, dissemination and retrieval of recorded information are two of the major problems in the utilization of pharmaceutical knowledge.

The role of our profession, then, may be summarized, according to Lewis, under three headings: (1) providing the specialist with detailed information concerning advances in his field; (2) providing to the professional man general understanding of important trends in the field to avoid obsolescence of professional education and to supplement experience acquired through professional activities; and (3) to provide access to accumulated knowledge in the field.

DON E. FRANCKE is Director of Pharmacy Service at the University of Michigan Medical Center and Assistant Professor of Pharmacy at the College of Pharmacy, University of Michigan, Ann Arbor, Michigan.

Presented to a Joint Meeting of the Press and Documentation Section and the Scientific Section, International Pharmaceutical Federation, Brussels 10 September 1958

Extent of Literature

This task is made extremely difficult by a staggering volume of literature published in an almost incredible number of journals. In 1952 there were 50,000 scientific and technical journals in existence throughout the world; in 1970 there will probably be 100,000 and by 2006 A.D., if the doubling continues, as estimated by Conrad, there may be 400,000. The 1957 edition of *World Medical Periodicals,* edited by Morton, contains a list of almost 4800 journals of medicine, pharmacy, dentistry and veterinary medicine. Of these, 1400 new journal titles were added and 600 omitted, making a net increase of 800 new journals since the list was first published in 1953. Included in the 1957 edition are 174 pharmacy journals, 38 journals devoted to pharmacology, and 24 journals devoted to chemistry. However, this list does not include the biochemical journals.

Not only is the number of journals increasing but the number of articles published in each journal is increasing. For example, Freyder points out that the *Journal of the American Medical Association* published approximately 300 more articles in 1952

than it did in 1947. This increase is typical of periodicals all over the world. Furthermore, the problem is certain to become more complicated as additional countries develop their science and technology and results of research are published in more and more languages.

Today, the professional person cannot hope to read, let alone comprehend and assimiliate intellectually, all the literature in his own and related disciplines. Rather, as Kent states, he is compelled to continually narrow his field of specialization and to rely on abstracts or summary reviews to be aware of important developments in his own and related fields. However, as Visscher has pointed out, the practical problem of making knowledge available to potential users has many facets. There are many kinds of users and uses and each must be served. The unique needs of the beginning student, the teacher, the specialized investigator, the professional practitioner, the industrial manufacturer, and the philosophic scholar must all be met. If their needs are not met, the results are useless duplication of work, poorly planned investigations, the use of inferior apparatus and experimental methods, and a narrowing of the viewpoints and vision of investigators, as emphasized by Crane, Patterson and Marr. While literature is the foundation of every important scientific inquiry, the problem today, as Bush has stated, is that "Publication has been extended far beyond our present ability to make real use of the record. The summation of human experience is being expanded at a prodigious rate and the means we use for threading our way through the consequent maze to the momentarily important item is the same as was used in the days of square rigged ships." Or, as Sewell (1957) has said, "In the field of therapeutic information librarians are faced with starvation in the presence of abundance. More than a thousand periodicals contain abstracts of original articles mentioning drugs, but I know of none whose primary aim is to abstract and index therapeutic information in an even partially comprehensive way."

Abstract Services

To plan for the future we must first evaluate the present situation regarding the availability of abstracts in pharmacy, medicine and related fields. Morton's *World Medical Periodicals* contains a list of 77 principal international abstracting journals. Of these, 12 are published in the United States, 8 in Britain, 13 in Germany, 2 in France, 20 in Holland of which 19 are in *Excerpta Medica,* 1 in Italy and 21 in the Soviet Union.

In a comprehensive study of abstracting services in the medical sciences based upon the journals listed in the first edition of *World Medical Periodicals,* Neelamaghan, of the Indian National Documentation Centre at New Delhi, concluded that there is a need for better coverage of journals as well as articles and a need for cooperation among services which supply abstracts. He also reported that no abstracts were available from 15 out of 94 pharmacy journals, for 7 out of 26 pharmacology journals, and for 6 out of 43 journals devoted to therapeutics. Further, of the 1630 journals published in Europe at the time of his survey about 19 percent were not scrutinized; in Asia 54.6 percent of her 272 journals were unabstracted; in Latin America the percentage of unabstracted journals was 54.8 out of 912 published journals; of the North American journals 13.6 percent were not covered; for the U. S. alone about 12 percent of the total number of periodicals published were not scrutinized, and many of these were local society or medical department publications. Of the 38 journals of Africa, 5 were not covered while 18.2 percent of the 22 journals from Australia-New Zealand were not scrutinized. For the whole world the figures were 1,062 or 30 percent of the 3,516 journals then currently published were not covered by the 10 principal abstracting agencies under discussion.

While these figures may have changed somewhat in recent years because of programs to translate and abstract the Soviet literature, they still remain essentially correct. Another problem brought out by this study is that even though one had available the ten abstracting services studied, he would still have incomplete information since 30 percent of the journals were not covered by the services and, on the other hand much duplication occurs since 50 percent of the journals are scrutinized by more than one of the abstract services. Thus, for comprehensive bibliographical searching, one must look into all services with the hope of getting a few more references from the non-duplicated journals and in the hope that in one service certain articles would be indexed earlier than in another.

A comprehensive survey of scientific abstracting and indexing services, carried out by Varossieau for the International Federation for Documentation and Unesco, showed that 42 services publish 780,010 abstracts or titles per year, whereas 402 services produce about 1,195,639 abstracts or titles annually. From this study it was concluded that only 20 percent of the articles produced per periodical are abstracted on an average by one of the 402 services and that less than one-half of the useful scientific articles are made accessible by the abstracting services. Emphasizing the value of abstracts, the survey confirmed the conclusion that in the first year after the publication of an article nearly half of the references to it are obtained from abstracts. Thus, in the beginning, the abstracting journal serves as a literature survey in 50 percent of the cases.

According to Sewell (1954), approximately one-third of all periodicals that contain original therapeutic information are not covered by any major abstracting service. Of the major services, *Chemical Abstracts* is least likely to cite all items on drugs from the journals it abstracts.

Larkey and Whittock studied over 6,000 journals and the coverage of them by 37 indexing and abstracting services. Of these journals, almost 4500 contained some sort of original work. It was found that, whereas 18 percent of the journals were covered by 10 or more services and 61 percent were covered by one or more services, there still remained 39 percent of the journals which were not covered by a single service. About 1,900 journals (or 75 percent of the total group covered) are covered by one or more of three services: *Current List of Medical Literature, Quarterly Cumulative Index Medicus,* or *Excerpta Medica.* For the remaining 27 percent we must rely on 34 other services. However, the authors were speaking only of coverage of journals and pointed out that the problem is extended if we want complete coverage of all articles and particularly if we want abstracts of these articles. Thus, other services might be very helpful in furnishing abstracts not otherwise provided.

Need for Pharmaceutical Abstracts

Pharmaceutical Abstracts, published by the American Pharmaceutical Association, was discontinued in 1948. During its existence, it was the most comprehensive abstract work in the English language on pharmaceutical papers. *Pharmaceutical Abstracts* was carried in the *Year Book of the American Pharmaceutical Association* from 1912 to 1934. The *Year Book* was discontinued with Volume 23, 1934. Beginning in 1935 and continuing through 1947, *Pharmaceutical Abstracts* was published monthly in the *Journal of the American Pharmaceutical Association,* separately paged and indexed. *Pharmaceutical Abstracts* for 1948 was published separately.

The following statement of explanation for the discontinuance of *Pharmaceutical Abstracts* was published in the Scientific Edition of the *Journal of the American Pharmaceutical Association* in 1948.

> "Investigation of the extent to which the abstract service rendered by *Pharmaceutical Abstracts* has duplicated similar services available in other publications such as *Chemical Abstracts, Biological Abstracts* and similar publications specializing in abstracts related to pharmacy revealed that discontinuance of the broad scope of *Pharmaceutical Abstracts* would not leave scientists in the field of pharmacy without adequate coverage of world literature in pharmaceutical chemistry, pharmacology and related fields.
>
> "Publication costs have increased to the point where their possible duplication and preparation of abstracts relating to pharmacy is no longer justified, especially since many who have been receiving *Pharmaceutical Abstracts* are also subscribers to other abstract publications . . ."

Some believe, however, that discontinuance of *Pharmaceutical Abstracts* has created a serious gap in the bibliography of pharmacy. Thompson and Burlage comment, "It has been stated by some that *Chemical Abstracts* gives a sufficient coverage of the pharmaceutical contributions; this opinion appears to be in error, since this fine abstract journal is only interested in articles that have some chemical interest or content. One of the compilers of this bibliography has been an abstractor for *Chemical Abstracts* for almost 25 years . . . and he has been impressed by the increasing number of articles which he has abstracted which have not been published in *Chemical Abstracts* because of the necessity of conserving space. It is estimated that this number is about 30 percent of those submitted for publication."

Supporting this conclusion is that of Cowles who pointed out that while studies made as early as 1945 revealed that more than three-fourths of the articles abstracted in *Pharmaceutical Abstracts* were duplicated in *Chemical Abstracts,* nevertheless, that other one-quarter of its contents supplied a badly felt need and there is now no one source to which we can turn for reliable clues to the wealth of current pharmaceutical literature. Sewell, McCann and Kelly have said that no single service lists most of the important pharmaceutical papers and that *Chemical Abstracts, Chemisches Centralblatt, Biological Abstracts* and, to a lesser extent, *Excerpta Medica* omit some important pharmaceutical papers appearing in journals they list as abstracting.

This conclusion is supported also by the fact that the Press and Documentation Section has heard two speakers in recent years present proposals for establishing international pharmaceutical abstracts. In addition, the Pharmaceutical Section of the Special Libraries Association in 1955 presented a proposal to the American Drug Manufacturers' Association to establish an abstracting service in the pharmaceutical field. Emphasizing that there is no single service or combination of services which supplies adequate abstracting and indexing from the pharmaceutical point of view, the plan calls for, according to Sewell (1957), a centralized agency with paid abstractors which would produce semi-monthly abstracts from 200 selected journals and an index with each issue, to be cumulated every six months.

Objectives and Definitions

If we wish to consider seriously a plan for the preparation of pharmaceutical abstracts, one of the first steps necessary is to outline our needs and objectives and the scope of subject matter which should be included. This is not easy because of the diversified interests of pharmacists.

Statements of objectives and definitions of abstracts were recorded at the Royal Society Scientific Informa-

tion Conference held in London in 1948. The following objectives of abstracting in science were enumerated:

(1) Complete coverage by abstracts of all papers containing new information, and

(2) Adequate access to abstracts, both for current information and back reference, for all scientists in all countries.

The following definitions presented by Sir David Chadwick clarify these objectives and emphasize that the type of abstract needed must vary with circumstances, such as ready access to libraries:

An *abstract* is a summary of a publication or article accompanied by an adequate bibliographical description to enable the publication or article to be traced.

An *indicative abstract* is a short abstract written with the intention to enable the reader to decide whether he should read the original publication or article.

An *informative abstract* summarizes the principal arguments and gives the principal data and conclusions of the original publications and articles which it considers made valuable contributions to knowledge, or are likely to be of use to a specific class of reader.

A *selective abstracting service* selects for abstracting only those publications and articles which it considers make valuable contributions to knowledge, or are likely to be of use to a specific class of reader.

A *comprehensive abstracting service* presumes to abstract every publication or article appearing in its subject field which contains original or valuable material.

The study made by Varossieau of the types of abstracts published by 421 services showed that 78 publish indicative abstracts, 139 publish the informative type, 55 publish both types, and 149 did not answer the question.

We must provide our own answer to this question because it is fundamental to the type of organization required to produce abstracts. If the indicative type of abstract would be helpful as a start in meeting our needs, we might consider (1) utilizing an established service which provides reproductions of the table of contents pages of journals or, if this does not prove feasible, (2) we may wish to start a similar service for members of the F.I.P. The existing service is called "Current Contents of Pharmaceutical Publications." It is published by Eugene Garfield Associates in Philadelphia and consists of reproductions of the contents pages of nearly 250 primary journals which report information relating to the discovery, development, testing, and use of drugs and chemicals. It is issued weekly and reports approximately 60,000 individual articles a year. It is sold on a service basis with a minimum of 25 copies to a subscriber for a price of $1,500 per year, with educational institutions and hospitals receiving a 50 percent discount. The price fluctuates with the size of the subscription, for example, the cost of 100 copies weekly is $4,000; for 200 the cost is $6,000; while for 300 the price is $7,500.*

Photoduplication of tables of contents of journals has been carried out for several years by pharmaceutical companies which have distributed them to research workers and other personnel. For example, Lederle Libraries is quoted by Maurice, Loftus and Strieby, as reporting a total cost of $6,400 per year for duplicating and distributing tables of contents of 374 journals to 200 users of the service. It was estimated that the use of this service resulted in a saving of $56,000 worth of time of research personnel. The Lederle publication is called "Current Ideas" and consists of photoduplicated copies of tables of contents stapled together. These are not available for general distribution.

Some Problems in Preparation

As we discuss the preparation of pharmaceutical abstracts, let us not deceive ourselves into believing that the task is a simple one. It is not. On the other hand, let us not be too discouraged if the task seems almost overwhelming. Rather, let us consider some of the problems and decide what can be done about them.

Crane *et al* have stated that the production of an abstract journal requires a trained organized group backed by a large scientific organization in order to systematically examine the literature, to prepare abstracts of papers and patents, to classify the abstracts for convenience in use, and to publish them with a suitable index. For example, *Chemical Abstracts* is the product of an editor, 19 associate editors and 35 assistant editors and advisors who are aided by 50 part-time section editors in addition to a large number of abstractors serving on a part-time basis.

Method of Obtaining

Crane *et al* believe also that the best method of obtaining abstracts is to assign papers to be abstracted to specialists (active in other scientific work) who have acquired skill in abstracting. Through this method abstracts will be obtained more promptly and they will report the more important actual results and thus be informative rather than merely descriptive. This general method of assigning abstracts to a panel of abstractors is recommended also by the report of the Royal Society Scientific Information Conference.

Varossieau, in studying methods used by 231 abstract services, reported 113 services assigned according to subject matter, 100 services assigned periodicals, while 90 services assigned specific articles.

*More recently, new group subscription prices have been made available for educational institutions and others. Inquiries for information should be directed to Eugene Garfield Associates, 1523 Spring Garden St., Philadelphia, Pa.

On the other hand, there is a growing trend to improve abstracts or summaries prepared by authors and to thus eliminate the need for preparation of separate abstracts. Such a recommendation was made by the Royal Society Conference, which, while recognizing the present unsatisfactory quality of authors' abstracts, called upon editors of scientific journals to cooperate by seeing that each paper is accompanied by a factual summary suitable for use in abstract journals. Holmstrom, in discussing the programs of Unesco, supported this view as being "more rational than the indirect and haphazard way that most abstracting has hitherto been done, whereby every month hundreds of thousands of scientific articles are scattered over the world and it is not until months later that the various abstracting services catch them more or less efficiently in their nets."

Varossieau reported on the methods used by 136 abstracting services publishing 398,147 abstracts or titles and stated that 13,258 were obtained directly from authors or original articles; 13,031 were obtained from the abstracts published with the original article; 193,037 were obtained from part-time abstractors; 140,076 were obtained from full-time abstractors; and 20,745 were obtained from other abstracting organizations.

It would appear that author abstracts of higher quality would reduce materially the task of preparing abstracts. Editors of scientific journals should be encouraged to (1) publish authors' abstracts and (2) make certain that the published abstracts are of high quality. Abstracting is not a mystery and authors should be guided by editors to prepare and publish suitable abstracts with their papers. If this practice were adopted almost universally, perhaps page proofs of abstracts could be sent to a central place for classification, photoduplication and distribution in the same manner that tables of contents are now photoduplicated.

Quality

In efforts to improve the quality and extend the use of authors' abstracts the Royal Society and Unesco have prepared guides for the use of editors and authors. These booklets are entitled "The Guide for the Preparation of Synopses" and "Guide for the Preparation and Publication of Synopses" — the latter is available in four languages.

In the preparation of abstracts, great emphasis is placed on making them complete from the indexing point of view. According to Crane *et al* of *Chemical Abstracts,* abstracts should include every measurement, observation, method, apparatus, suggestion, and theory that is new or of value in itself; new terms should be defined; the author's purpose should be made clear and his conclusions reported in a factual rather than critical manner.

Length

The length of abstracts vary from a sentence to a full page or more. There appears to be no optimum length for an abstract since length depends on (1) the type of user, (2) the subject matter of the paper, (3) the language in which the paper is written, and (4) the availability of the journal in which the original article appears. However, the so-called abstracts prepared for use in most pharmaceutical companies would

not be suitable for publicaton in an informative abstract journal. For example, the abstracts prepared by some companies do not exceed 75 words in length and they are intended only as indicative abstracts to be used by those who have ready access to all journals, according to Strieby. Lewis states that the average length of an abstract in *Chemical Abstracts* increased 44 percent in the period 1936 to 1946. In the same journal 40,000 abstracts were published in 1945 and 80,000 in 1955.

Promptness of Appearance

Prompt appearance of abstracts is of major importance if we wish to offer subscriptions to an abstract service. For this reason it may be well to consider offering a specialized service confined to well defined areas of the pharmaceutical field and to emphasize complete coverage within the selected field and prompt appearance of abstracts. This would be preferable to attempting to cover a broad subject area and doing it slowly and incompletely. An attempt should be made to provide abstracts not later than a month after publication of the original article. As was stated at the Royal Society's conference on abstracting, "There is no use in achieving speed in publication of the original paper if speed in abstracting is not equally obtained since the distribution of the original is bound to be limited . . ."

Sir David Chadwick has reported that even though industrial firms take a large number of abstract journals, a significant number of them prepare two-thirds of the abstracts they use from the original journals and obtain only one-third from abstract journals. This emphasizes the importance industrial firms attach to the rapid availability of abstracts and illustrates that they prefer to make the abstract immediately for themselves rather than wait for its appearance in the abstract journal. This is not surprising when we note, as stated by Southern, the larger pharmaceutical libraries may contain 30,000 volumes, receive more than 1,500 current periodicals, and have staffs of 20 or more members.

Cost of Abstracts

It may be helpful to report what others have found to be the cost of preparing abstracts.

For *Biological Abstracts,* Varossieau quotes a cost study made by Flynn who reported that in 1947 the publisher's cost of an abstract was $4.75. For 1947, the total budget of *Biological Abstracts* was $126,622.07 Nearly one-half of this amount was spent for printing and distributing the abstracts; one-third was spent for salaries. Of the total cost 63 percent was covered by subscriptions, 11 percent by sales of back volumes, and 11 percent by gifts, of which 8 percent was given by industrial firms and 3 percent by scientific institutions. During the year 1947, the number of abstracts was 26,256 taken from 2500 periodicals. The number of abstractors at the beginning of 1947 was 3000 while at the end of the year there were 5000 because of the addition of foreign abstractors.

At Eli Lilly and Company, the cost of preparing abstracts has been estimated by Maurice, Loftus and Strieby at $1.50 per abstract. This includes time spent by the abstractors, the library staff, and departments responsible for mechanical processing. It should be pointed out, however, that the type of abstract produced at this cost is an indicative abstract designed principally to provide an index to current literature.

The cost of the *Squibb Abstract Bulletin* has been reported by Winifred Sewell (1954) in a most interesting and valuable discussion of problems of issuing an abstract journal which was discontinued after almost 25 years of existence. In 1951, the estimated cost of the *Squibb Abstract Bulletin* was almost $28,000 which included labor costs for abstracting, editing, proofreading, reproducing, assembling and distributing, and the costs of materials used. It did not include the cost of subscriptions to journals or overhead.

For this $28,000 a weekly abstract bulletin was produced which, in 1951, contained 3,728 informative abstracts done by the library staff; 1062 copied authors' abstracts; 6435 title references; 1348 informative patent abstracts prepared by the library staff; 52 patents from which selective quotations were made; 284 patents referred to by title only. This makes a total of 12,909 items or 248 items a week. The cost per item published was a little more than $2.00. This was approximately double the cost of producing the same bulletin in 1946.

Languages

It is estimated by Crane *et al* that little more than half of the published chemical papers now appear in the English language, with German second with a little more than 10 percent. Other languages used considerably in pharmaceutical and chemical publications may be listed in the following approximate order: French, Italian, Russian, Japanese, Spanish, Dutch. Swedish, Polish, Portuguese and Czech. Several important Swedish journals and many Japanese journals now publish in English.

Varossieau in a study of 421 abstracting services found 259 published in English; 71 in French; 11 in German; 10 in Spanish; 8 in Italian; 7 in Dutch; 7 in Portuguese; 4 in Danish; 4 in Japanese; 4 in Swedish; 3 in Czech; 3 in Turkish; 1 in Chinese; 1 in Polish; and 29 in polyglot.

Scope

One of the major questions which must be decided in the consideration of pharmaceutical abstracts is that of scope. This is a particularly difficult question because pharmacy is based upon so many sciences. For

example, *Pharmaceutical Abstracts,* formerly published by the American Pharmaceutical Association, was divided into the following classifications: Bacteriology; Botany; Chemistry—analytical, biochemistry, general and physical, organic including alkaloids, essential oils, glycosides, ferments and carbohydrates, other plant principles, insecticides, and unclassified; Endocrinology; New Remedies; Pharmacognosy; Pharmacology; Pharmacy—bioassaying, dispensing, economics, education, galenical, history, hospital, legislation, miscellaneous, and pharmacopoeias and formularies; Public Health; Therapeutics; and Toxicology.

As may be seen, the scope of these abstracts was fairly comprehensive. It would, indeed, be a major undertaking, however desirable, to attempt to make abstracts covering such a wide classification available today.

Indexing

An abstract service without a good index is almost worthless for the retrieval of information. It may, in fact, be a hiding place for knowledge unless a good key is provided through a good index. According to Crane *et al,* the average number of entries for a single paper indexed in *Chemical Abstracts* is 5; however, more than 1000 entries have been used for indexing a single paper.

Sewell, McCann and Kelly have made rather detailed studies of indexing practices used by the major abstracting and indexing services and found much poor and inadequate indexing in most of the services. Blythe and Zirkle state that many publications are indexed inadequately from a pharmaceutical point of view, particularly as regards stability problems and related topics.

Indexing is much more difficult to learn than abstracting. *Chemical Abstracts,* according to Crane *et al.,* considers that it requires at least 2 years to train one of its subject or formula indexers and that he usually does not reach top proficiency in less than 5 years of active indexing. *Chemical Abstracts* produces indexes based on authors, subjects, chemical formulas, patent numbers, and organic ring structures. (See also "Indexing," Bulletin 779, University of the State of New York, Albany, and a discussion of indexing of abstracts by Bernier and Crane in *Industrial Engineering Chemistry* 40:725, 1948).

Mechanical Aids

Expansion in the volume of pharmaceutical literature and the number of abstracts must some day cause us to give careful consideration to the use of mechanical aids. The problem, as Ditmas has pointed out, is not only that of recording information so that the research worker may know what has been written, but also that of creating some device by which the required data may be located and selected from the records.

Some groups are now making use of mechanical methods. The American Society for Metals and the American Society of Erosion Engineers have been leaders in providing abstracts on hand-sorted, punched cards so that its members can maintain their own files. The former is now investigating the possibilities of establishing mechanized card sorting services, states Lewis. Varossieau reports that 8 abstracting services are now using punched cards to some extent. Brindley discusses the punch card system used by Merck and Company and notes that a staff of 4 abstractor-coders, an abstractor's assistant and a clerk-typist can scan, abstract, code and prepare punch cards for 200 separate journals per month. (An annotated bibliography on the use of punched cards in documentation is contained in the *Journal of Documentation* 3:250 (March) 1948).

Cooperative Preparation of Abstracts

We know that a large number of scientific journals and a large number of abstract journals and a large number of pharmaceutical companies prepare abstracts of the same articles and that much duplication and waste of effort result. Cannot some reasonable way be found to promote the cooperative preparation of abstracts in such a manner as to make them more readily available to the profession and to avoid the duplication of effort and expense? If this can be done, as Hutchisson has said, "the interchange of knowledge between people, which occurs through abstracting and indexing, may contribute far more to progress than the new knowledge itself."

Sir David Chadwick has mentioned three conditions favoring the development of abstract journals: (1) a group of customers, usually extensive; (2) a large number of publications or a wide scatter of relevant information; and (3) a society, institution or government department able to undertake the expense of initiating such a service. In our case the first and second conditions exist but the third, as far as expense is concerned, is lacking. Nevertheless, we do have individual pharmacists, faculties of pharmacy, members of the pharmaceutical industry and others who would be willing to pay for an abstract service. Under these circumstances perhaps the International Pharmaceutical Federation could serve a most useful purpose by extending its cooperation to all interested groups in developing a specific program to accomplish the objective.

General Suggestions for Cooperative Action

During recent years many suggestions for the cooperative processing of abstracts have been put forth. Duyvis has suggested that services producing more than 6000 abstracts annually might yield their copyright for

the abstracts at a low standard price *e.g.* between two and four dollars, to services with a production of less than 1000 abstracts per annum. The Royal Society's Conference recommended that abstracting agencies cooperate by agreeing to an exchange of abstracts and by agreeing on the subject field and services of each. The International Conference of Science recommended that Unesco approach, through its national commissions in member states, scientists and abstracting agencies in each country to establish standing committees on science abstracting which could be either national or regional in character. The Unesco Coordinating Committee on Abstracting and Indexing of Medical and Biological Sciences has now been constituted on a permanent basis. Hutchisson points out that the International Council of Scientific Unions has an abstracting board which has concentrated its preliminary efforts (in relation to physics abstracts) on (1) wider use of authors' abstracts, (2) reduction in lag time between article and abstract, (3) wider coverage, and (4) improved classification and indexing. The Abstracting Board urged editors to require the use of authors' abstracts prepared in accordance with rules established by the Royal Society and requested editors to send page proofs of abstracts in their journals by air mail to the abstracting journals issued in various languages. This procedure speeded publication of the abstract by 4 or 5 weeks.

Farradone has recommended the establishment of small central clearing houses to coordinate the work of abstractors, reduce duplication and pass unwanted material on to other interested groups.

The Royal Society's Scientific Information Conference recommended that editors send copies of abstracts to a central agency within their own country where they would be indexed and classified. The classified abstracts would then be sent by the central agency to all abstract journals in the world concerned with the subject. At the same time the central agency of each country would send copies of all abstracts to similar central agencies in all other countries so that in many centers throughout the world there would be complete sets of classified abstracts to serve the needs of each country. The Royal Society's Conference also recommended that abstract journals allow the use of each others abstracts and pointed out that *British Abstracts, Chemical Abstracts, Science Abstracts* and others have arrangements for interchange of galley proofs with freedom to use the material.

Specific Examples of Cooperative Action

Efforts to establish a program for cooperative processing of abstracts in the American pharmaceutical industry have been reported by Strieby (1956), Bloomer, Sewell (1956), and Cowells (1951). This program, proposed by a special committee of the Pharmaceutical Section of the Special Libraries As-

sociation, involves the establishment of a special agency with the cooperation of *Biological Abstracts*. To date, no action has been taken on the proposal.

The ophthalmic literature is abstracted on a centralized cooperative basis in Britain. The abstract service has an editor, a technical editor, a 13 member editorial board, and 30 associate editors selected from among the various countries. It has reciprocating abstracting arrangements with *Abstracts of World Medicine, British Abstracts, Psychological Abstracts, American Journal of Ophthalmology,* and *Ophthalmologica Ibero-Americana*. The cooperative efforts of physicists in various countries in the production of abstracts has been cited.

Petroleum Industry Abstracts

One of the finest examples of the cooperative centralized processing of abstracts is that carried out by the petroleum industry. The fascinating story of early failures and later success of this project has been told by Field and Weil. Many oil companies had been issuing abstract bulletins for years at a cost of from 10 to 30 thousand dollars per year per company. Attempts were made as early as 1933 to start a cooperative abstracting service but it was not until 1954 that success was achieved. The service was started with $50,000 collected from the oil industry and it was decided to cover 100 periodicals of basic interest to all companies and to issue abstracts weekly. The abstracting agency has a supervisor, 4 abstractors, and 4 typists who work under policies formulated by a Committee on Centralized Abstracting. At first the abstracts were sold at a uniform rate to all subscribers but later a sliding fee schedule was adopted based on the financial resources of the individual companies. The price range adopted was from $500 to $6000 per year per company.

It is interesting to note the comment of Field who said that one of the major errors in initial planning for a centralized abstract service was to rely on technically trained people for advice first, rather than on those trained as librarians. This was later corrected and librarians who had had experience in preparing and publishing abstracts were included on the planning committees. Let us not make the same mistake.

Helpful suggestions for planning for the cooperative, centralized preparation of abstracts have been given by Field, as follows:

Be sure you have a committee of people high in their respective organizations, who have a voice in the financing of such a project.

Be sure you have a committee of librarians who will work out all the mechanics and who will educate the men of the above committee.

Be sure your report is thorough, covering all aspects of the physical setup, staff, costs, etc.

Be sure to protect the cost estimates by reasonable factors.

Be sure, before it ever comes to a vote, that the ones who must approve it know the complete story.

Be sure you start on a small scale until you get your feet firmly planted.

Be sure the staff of the centralized agency is well qualified and familiar with all the subject interests.

Discussion

From the foregoing presentation it is evident that the establishment of a central agency or any type of cooperative group for receiving, preparing, classifying and indexing abstracts with a wide subject range is a task which will take years of planning and substantial financial support. On the other hand, we may be quite confident that the cooperative processing of abstracts will be achieved and this will undoubtedly take place first in the pharmaceutical industry because of its financial resources. What, then should be our interest in this project? It seems to me that our main efforts should be directed toward being a part of the planning of such a project. Our principal objective here should be to have the profession as a whole share the results, in other words, to have the abstracts made available to faculties of pharmacy, to local, national, and international pharmaceutical organizations and to individual practitioners of pharmacy.

Second, we should take immediate steps to plan for the preparation of abstracts in a field limited to pure pharmacy. Considerable thought and planning will be required to define the scope of our endeavors, to select the journals to be abstracted, to enlist the cooperation of editors of pharmaceutical publications, and to establish a method for distribution of the abstracts and, possibly, for their publication in an abstract journal. In developing such a program, we would undoubtedly want to set up an arrangement for an exchange of abstracts with other abstract journals which publish abstracts which fall within the scope of subject matter in which we are interested.

Recommendations

It is recommended:

1. That a Committee on the Cooperative, Centralized Preparation of Pharmaceutical Abstracts be established;

2. That the Committee be composed of pharmaceutical editors, scientists and others interested in pharmaceutical documentation, including pharmaceutical librarians;

3. That the Committee have as its principal objective the formulation of a financially realistic program for promptly obtaining, classifying, indexing, publishing and distributing abstracts of pharmaceutical

interest, with emphasis on subject matter which is not now included by the major abstracting services, and that an attempt be made to begin publication of the abstracts not later than January 1961.

4. That the Committee explore with other services publishing abstracts of pharmaceutical interest, the possibility of establishing a program for the exchange or reproduction of abstracts, with the objective of increasing the scope and value of the F.I.P. abstract service to the profession;

5. That the Committee develop a specific program to promote the publication of authors' abstracts of high quality concurrently with all articles of a professional or scientific nature published in pharmaceutical journals throughout the world;

6. That the Committee explore the value of photoduplicated tables of contents of pharmaceutical and related journals to the members of the profession and investigate methods whereby these may be made available, if such be desirable;

7. That the Committee seek the advice and cooperation of national and international organizations interested in promoting the preparation and use of abstracts and other forms of documentation in the sciences in general and in the pharmaceutical sciences in particular; and

8. That the Committee explore the possible advantages and disadvantages of enlarging the scope of the abstract service as to make available an extensive, comprehensive abstract service which would provide essentially a complete coverage of items of pharmaceutical interest.

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Conveyor for ward stock medications

DRUG UNITS ON WHEELS

by SISTER MARY VICTORINE

► FEW OF US LIKE CHANGES AND THE WRITER IS NO exception to the rule. When our Administrator tactfully suggested that we adopt the system of servicing nursing stations by means of a pharmacy mobile drug unit, we rather reluctantly started mapping out a procedure.

We acknowledge that we had a problem. With the expansion of our new hospital, servicing some 650 patients, as well as a very active Outpatient Department, the traffic at the Pharmacy was becoming acute. The impetus towards beginning this system was to relieve this congestion and to keep the nursing personnel in their respective departments. While administering medicine is a part of nursing service, often the time consumed in procuring it lessened the nurses' effectiveness in some other aspect of the patient's care.

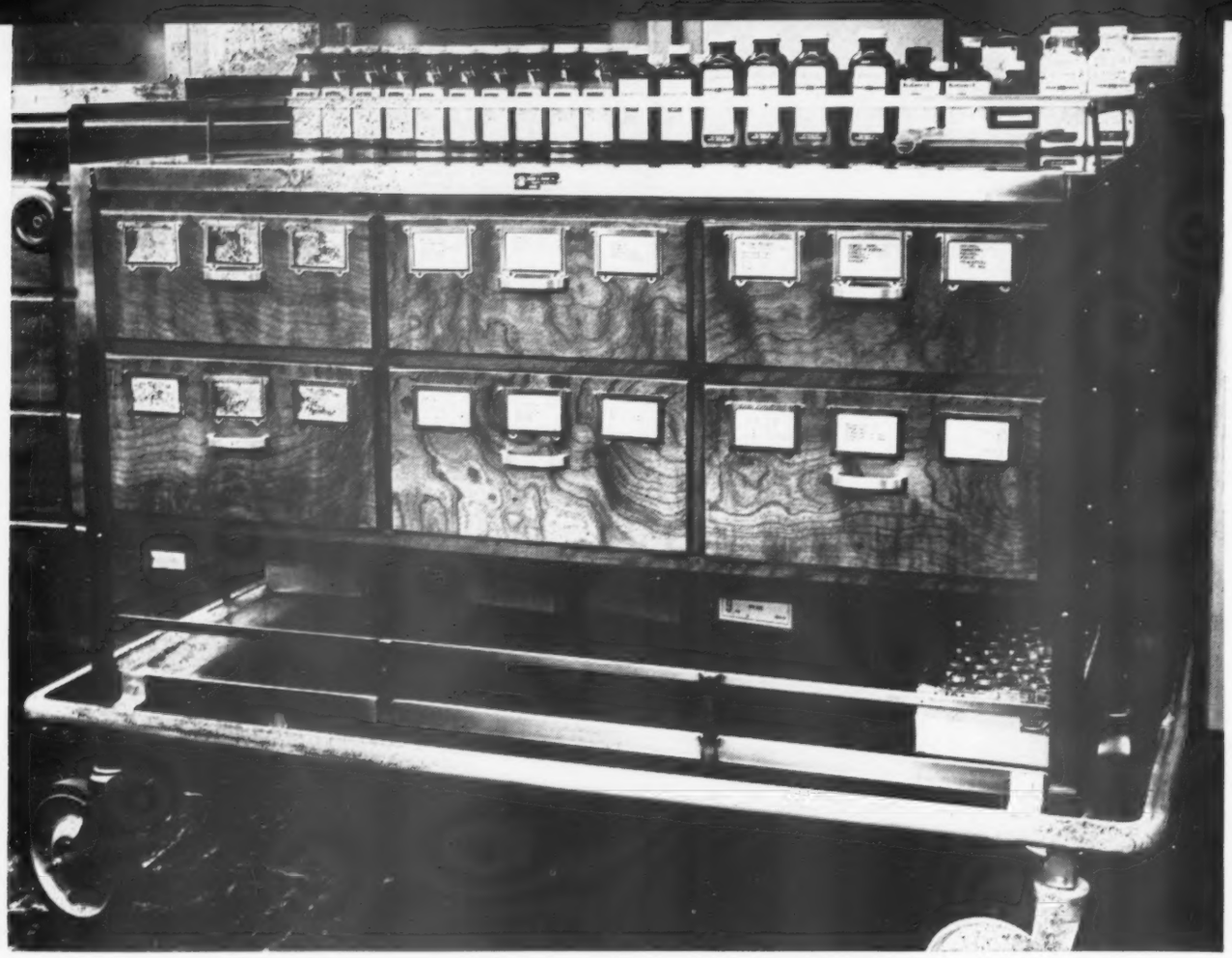
After a tour through a few neighboring hospitals, we had the full picture of what the mobile drug unit would be like at St. Vincent Hospital.

During a week of experimentation as well as several conferences with our Administrator and nursing service personnel, we set up our mobile drug unit to meet the demands and conveniences of our nursing units. We arranged to have two specially constructed conveyors available for this purpose. One for stock medications and the other for prescribed medication and specialties.

SISTER MARY VICTORINE is Chief Pharmacist at St. Vincent Hospital, Worcester, Mass.

Conveyor For Ward Stock

The Pharmacy is open daily from 7:30 A.M. to 7:00 P.M. One of our Sisters or an assistant, with a male attendant, starts out at 7:30 A.M. with the stock conveyor to service the stations. We use the exchange method; that is, we remove the empty or partly-filled container and replace it with a filled one. This is done four times a week, on Mondays, Wednesdays, Fridays and Saturdays. This tour of 13 stations takes about one hour. The conveyor is then returned to the Pharmacy where the empty



Conveyor for prescription drugs

stock bottles are replenished and prepared for the next servicing.

The conveyor is so constructed that internal drugs are kept separate from external medication.

Conveyor For Prescription Drugs

Two other assistants leave the Pharmacy at 8:45 A.M. with the special drug conveyor. This conveyor is equipped and labeled with drawers and shelves suitable for its specific purpose. Each nursing station is serviced, and during this procedure the pharmacist is given the opportunity not only to check supplies but also to observe the condition of labels as well as the order in which drugs are arranged. Couriers (*i.e.* pharmacy students or technicians) visit the departments while the mobile unit is servicing the stations for the purpose of collecting the new requisitions that are picked up by the pharmacist or her assistant; the couriers return these to the Pharmacy where they are processed for issue. (There is no pneumatic tube system for the Pharmacy at our hospital.) At 10:30 A.M. these prescriptions are ready to be delivered and when they are deposited at the nursing stations, prescriptions ordered since the 9:00 A.M. pick-up are taken. Any medications needed after this time are called for by some one in the Nursing Department making the request.

Because of the routine of the hospital, the greatest number of prescriptions are filled in the morning. The pharmacists still have to prepare many prescriptions, but they work with greater efficiency because the day's demands are more evenly distributed.

While this schedule is, in a sense, a stable routine, it is in no sense an inflexible one. Any prescription which is an "emergency order" is filled and delivered immediately. Even during the hours when the Pharmacy is closed, from 7:00 P.M. to 7:30 A.M., there is a pharmacist on call who gives prompt attention to any request.

Night and Emergency Stocks

We have in each nursing station a stock box (Haz-Ben Storage Unit). This box is divided into compartments which are labeled and supplied with the drugs most in demand. We also have a box set-up at each nursing station for emergency use, as well as a drug cupboard for the use of night requisitions. Here, of course, it was necessary to educate the nurses to the necessity of making replacements of these medicines the following morning.

"Stat" orders are handled as emergencies or as regularly requested medicines, depending on their need.

Narcotics and Barbiturates

Narcotics and barbiturates receive special attention. We use the Drug Control Unit System, illustrated below*, which we have found to be a time saver and very practical. It eliminates much bookkeeping and serves as a permanent record. As may be seen from the illustration, this Drug Control Unit contains 20 capsules of the controlled drug inserted between two pieces of heavy cardboard. The top piece of cardboard contains perforations which expose the capsules to view. When the Drug Control Unit is assembled, a sheet of aluminum foil is placed over the bottom piece of cardboard, the capsules are placed on the aluminum foil and covered with a sheet of cellophane and then the perforated top piece of cardboard is superimposed in such a way that the capsules show through the perforations. The entire unit is then stapled to hold it together. The capsules may be conveniently dispensed directly from the unit by breaking the cellophane, removing the capsule, and recording the necessary information.

Advantages

In summarizing, we would say that the advantages of this "drug unit on wheels" method are:

1. Relieving congestion by eliminating constant traffic to and from the Pharmacy.
2. Conserving nurses' time for bedside nursing. (Frequently the nurses would have to stand for some time awaiting their prescriptions.)
3. The pharmacist and assistants have now ample time for prepackaging, bulk-compounding, filling prescriptions and house orders and also for checking, rotating and ordering.
4. The Chief Pharmacist and others on her staff, because of their close contact with nursing stations with the "Drug Unit On Wheels" system, feel that they have a closer knowledge of drug activities on the floors as well as being in a position to provide superior service.

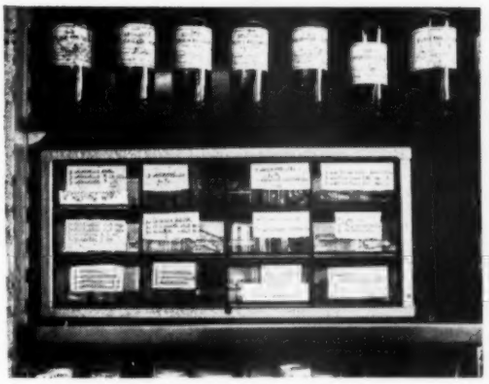
Disadvantages

The disadvantage can be stated briefly. Hospital personnel miss the contacts they had with Pharmacy, which resulted in a personal relationship and lessened institutional feeling. Though certainly a desirable situation, it seems better that it should be sacrificed for the greater good.

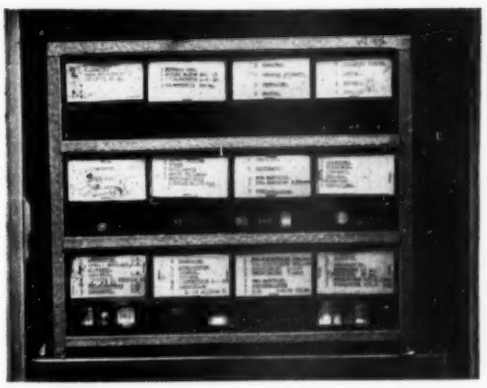
Though we did have many doubts concerning this system, we must acknowledge that it has done a great deal to improve our situation.

*Obtained from Woodbridge Press Inc., 80 Broad Street, Boston 10, Massachusetts.

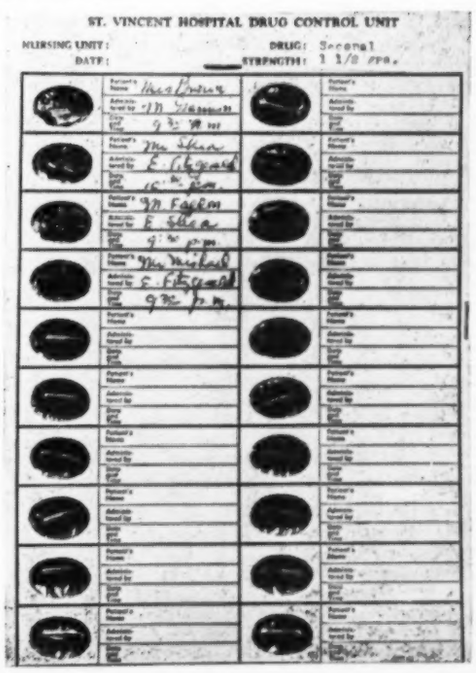
Night drug cabinet



Nursing station emergency box



Nursing station stock box



Drug control unit system

methods of

PROMOTING SAFETY and CONTROL

in hospital pharmacy

by JOHN WEBB

► THE AMERICAN HOSPITAL ASSOCIATION has officially recommended "that hospital pharmacists extend their responsibilities to include participation in programs dealing with the safe handling of drugs throughout the hospital."

Prepackaging

We should first make sure that our systems for control and safety are adequate within the pharmacy itself. Let us consider prepackaging. One point that should be emphasized in a prepackaging program is the added safety factor. During peak loads, when everyone is rushed and under pressure, errors tend to creep in. Another period conducive to errors is late in the day when people are tired and not as alert as we might wish. Then we have all the miscellaneous reasons for errors, such as daydreaming, interruptions, etc.

Prepackaging allows a smoothing out of the peaks and valleys in the work schedule, reduces pressures and chance of error. If you dispense 1,000 tablets in units of 20 there is an opportunity for 50 errors in counting and 50 errors in labeling. Certainly it is more sensible to package the entire 1,000 tablets at one time in an area devoted exclusively to this operation. If everything packaged is checked by a second pharmacist, it is much easier to check the 50 units at one time than the 50 times required for individual packaging.

An added safeguard in a prepackaging operation is a control card. A complete record is transcribed which includes the item packaged, manufacturer's control number, total number of units, size of each unit, who packaged, who checked, and the type of container and closure. Each control card is assigned a number. This number appears on each label of the prepackaged containers.

Prepackaging has a particular safety feature in a small pharmacy for here there is often only one person covering during coffee breaks, lunch hours, holidays, etc. It is a comforting feeling to know that when you dispense a prepackaged item it has already been checked once before. A nursing supervisor certainly must feel safer if she can obtain packaged units during the night. This eliminates the need for her to dispense drugs.

Periodically, in some hospitals, a bottle will be found on the nursing unit that contains two different size capsules. To make sure that this does not happen before the bottle leaves the pharmacy only one type of capsule should be packaged and labeled at a time in

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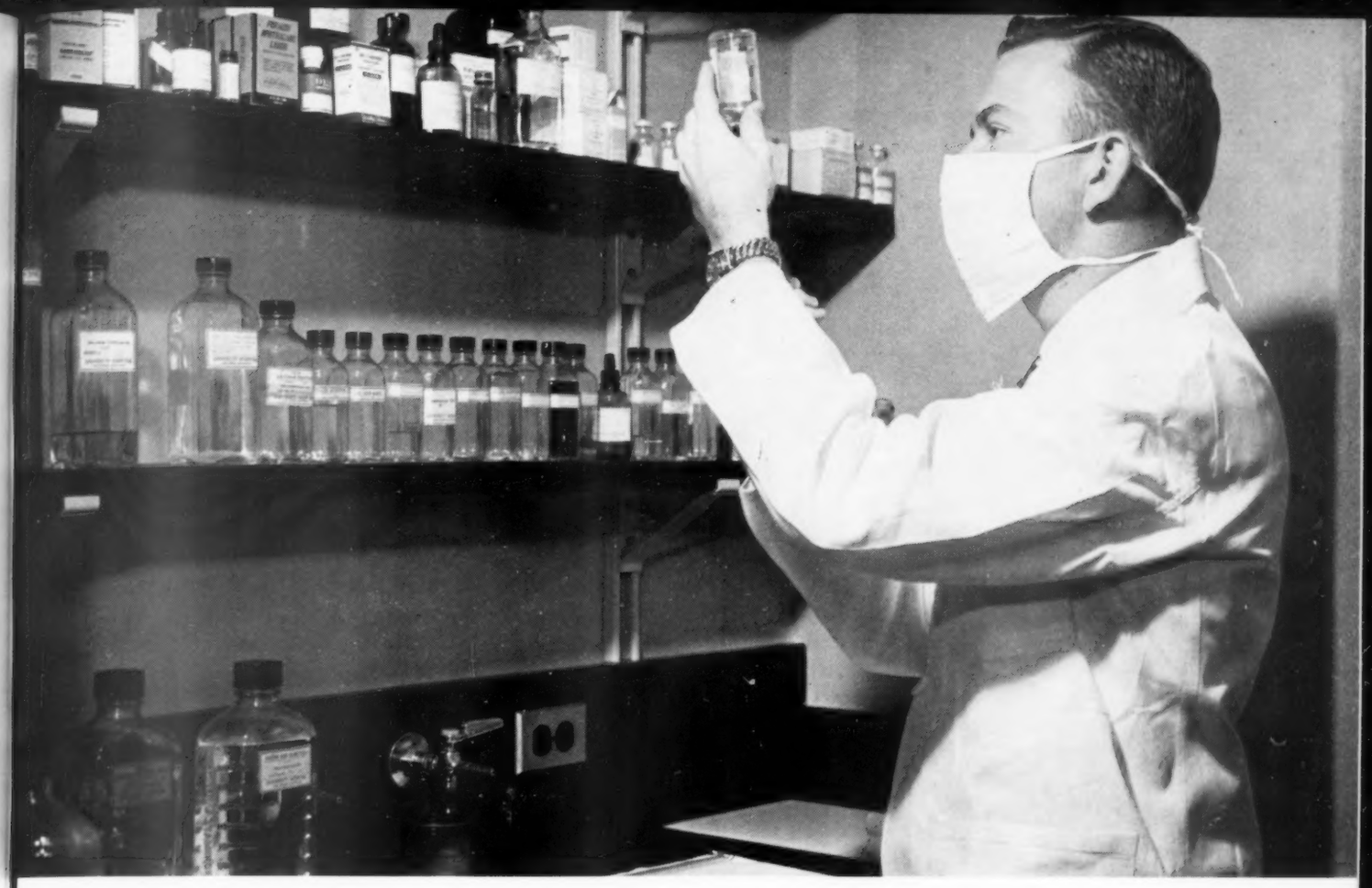


a quarantined area. Original containers should be discarded when emptied.

Preprinted Labels

Preprinted labels help reduce errors. Whenever possible it is preferable to use preprinted labels, for written or typed labels are liable to error in both spelling and strength. One thousand written or typed labels must be proofed 1,000 times while 1,000 preprinted labels need only have one label proofed to ascertain the accuracy of the other 999. It is obvious that with the typed labels there is 1,000 times the opportunity for error. Naturally, all labels must be checked along with contents at the time of dispensing.

Normally, preprinted labels are more legible and uniform. Uniformity is important. For example, one pharmacist may type the abbreviation "cc." while another may use the abbreviation "ml.". This may cause a nurse to be confused. It is wise to have a policy as to what terms and abbreviations are to be used on labels.

Directions on Labels

Some pharmacies put the directions on the label of inpatient medications. This practice can be dangerous if the physician changes his original orders or if the dosage is normally reduced as therapy progresses. Two examples of such are digitalis and the adrenal steroids. Some hospitals do not allow directions to be placed on inpatient medication labels.

As an added check and to facilitate handling, a stock number may appear in one of the lower corners of the preprinted label.

Auxiliary Labels

Adequate auxiliary labels should be included on the container. For example, a change in the shape, size, or color of a tablet may require a label of explanation in addition to the regular label. The same is true of any change in a liquid medication. Whenever possible it is wise to include any warning or instructions on the permanent label, *e.g., External Use, Pour From Side Opposite Label,* etc., since, occasionally, the labeler forgets to put on the auxiliary label.

Periodically a nurse will complain that a manufacturer's label is ambiguous. If, on a multiple dose vial, the concentration in each ml. is expressed, then the manufacturer should state clearly the *total* dose in the ampul or vial. Otherwise, as has been proven on more than one occasion, the busy nurse reads the concentration as total contents and may inadvertently give an overdose. If there is any possibility of ambiguity the pharmacist should relabel the preparation before it leaves the pharmacy.

It should be required that the nurse ordering a medication include on the medication order the directions and the mode of administration. This allows the nurse to check directions well in advance of the time the patient is supposed to take his medicine. It also gives the dispensing pharmacist and the pharmacist checking him an opportunity to check both the nurse and the physician.

Some patients bring their own medications into the hospital. Normally the directions are written on the label. It is unfair for the hospital and the nurse to assume the obligation of administering unknown medications. It is a wiser policy to put such medicine with the patient's personal effects and to use only those medications supplied by the hospital pharmacy and uniformly labeled according to hospital policy.

A number of hospitals use a preprinted order form listing floor stock items. This is a good practice since complete specifications can be standardized. Whenever a nurse writes her wants in longhand, complications tend to set in. Illegibility of handwriting may be a factor. One nurse may refer to an item under one name while a sister nurse may order it under a different name. Often they abbreviate to save time. It is a good policy to discourage the use of abbreviations. If the pharmacist is responsible for the solution room, central sterile supply, and instruments, as well as the pharmacy, the abbreviations and modifications of names become limitless. A new employee finds it all but impossible to cope with such a situation.

It is a healthy situation when the pharmacy is responsible for stocking the floors. It insures a constant check of the medicine stations, tends to make sure that excessive supplies do not accumulate, and allows a check for proper rotation of stock.

Quite often pediatric units have unique dosage forms. To make administration of these dosages easier and safer, the pharmacy can often dispense items to conform to pediatric usage. Whenever a preparation is diluted, modified, or manufactured, one should keep a close check on each step. If feasible, there should be an assay done and, where necessary, bacteriological controls should be performed.

After-Hour Service

A number of hospitals, including our own, have a standard rule that nurses are not allowed to compound medicines. While this may sometimes be carried to an extreme by an individual nurse, it is an excellent safety measure. In our hospital night nursing supervisors may obtain patient medication. Three safeguards are set up. First, they check a cabinet containing a rather extensive list of emergency and commonly used drugs. Second, if the drug desired is not in the cabinet, they may enter the pharmacy. Generally they find the medication prepackaged and properly labeled. Finally, if they must dispense, they take only an amount sufficient for the period remaining before a pharmacist comes on duty. If the drug is a capsule or tablet it is put into an envelope and labeled to distinguish it from a standard container and label when it reaches the nursing unit. The supervisor issuing the drug writes her name on the envelope.

Narcotics

Both nurse and pharmacist have an obligation to use care in handling narcotics. A system we have found to be satisfactory consists of issuing the narcotic and record sheet as a unit in a sealed polyethylene bag. Both the sheet and vial bear the specification of the narcotic. Each bears an identical number. This number also appears on the receipt. The contents of the polyethylene bag can be readily seen at all times. Both record sheet and narcotic are retained clean and as a unit until the seal is broken and they are put into use. It should be noted that the pharmacy issues the record sheets and that only one sheet is issued per unit of narcotics. If any errors in transcribing are made by the nurse, they show on the original record sheet.

The number on the narcotic vial appears on a pressure sensitive label auxiliary to the standard label. Thus number system helps insure proper sequence of use. If an emergency arises and one floor borrows from another, we have a record of to whom the original vial was issued. We know, also, who returned it to the pharmacy. If such an emergency is repeated to any extent, we are aware of such transfers and can have a consultation as to the reasons why. Since the hospital rules forbid borrowing of narcotics except during an emergency, nursing administration is pleased to have this additional check. Once each week there is a narcotics check of each nursing unit, done jointly by a nurse and pharmacist. Any apparent discrepancies are reported to both a delegated person in nursing administration and to the chief pharmacist.

Whenever possible it is a wise policy to have the issuance of narcotics assigned to one pharmacist. Then if a question arises there can be only one person responsible and no time is lost ironing out an error or misunderstanding.

Some pharmacies deliver narcotics to the floors. While this may be satisfactory in smaller hospitals, the volume of narcotics needed to be transported in a large hospital would create an unnecessary invitation to loss or theft.

The amount of shrinkage which results from the residual in a needle and syringe will not allow the nurse to get 20 x 1 ml. doses from a 20 ml. multiple dose vial. It hase been shown by Dodds and others that the amount lost is real and varies with the number of entries into each vial and with the technique

of the nurse. The volume lost with a polyethylene disposable syringe may be as little as 1/10th that of the conventional glass syringe. This is one of the reasons the pharmacy recommends the widespread use of these new disposable syringes.

Control of Manufacturing

Those hospitals doing extensive manufacturing without accompanying laboratory controls should re-evaluate their overall program. It will do little good to cooperate with the nurse in safe handling of drugs if the potency of a drug is below standard before it even leaves the pharmacy. A chemical assay will periodically pick up a deviation from normal potency.

While hospital pharmacists in general pride themselves in practising the most modern techniques, there are a number who find it difficult to give up the use of hypodermic tablets to be used parenterally. These tablets rarely provide the full dose ordered by the physician for they are usually friable and therefore become reduced in size or fragmented upon handling. Automatically there is a proportionate loss of active drug. If the tablet is put into solution by heat there is apt to be loss, due to spattering of the liquid plus the residual left on the spoon, in direct proportion to the technique of the nurse. Once again the concept holds true that it is much more sensible to have a central location *i.e.*, the pharmacy, prepare and dispense parenteral solutions under definite specifications and supervision than to have throughout the hospital diversified, largely uncontrolled techniques for preparation of parenteral solutions from hypodermic tablets. Probably the one reason hypodermic tablets still remain in existence is the fact that purchasing agents and pharmacists think they are saving money since hypodermic tablets cost less than ampuls. They forget to include either the basic responsibility to the patient, or the equipment and nursing time needed to prepare solutions from the tablets.

It would be pleasant to think that the use of hypodermic tablets was on the way out. However, within the past year the General Committee of Revision of the *U.S.P.* sent a questionnaire to the department of pharmacology of several medical schools asking if hypodermic tablets should be admitted to the *U.S.P.* It might be pointed out that tablets of apomorphine hydrochloride are officially recognized in *U.S.P. XV*. Since the only dose officially given is for subcutaneous use, the inference is that the tablet must be a hypodermic tablet. Certainly this is the only way this drug is available commercially. Another interesting aspect is that the *Pharmacopeia* includes a solubility test for hypodermic tablets. This might be a good place to suggest that hypodermic tablets of nitroglycerin be called sublingual tablets so that their use may be more properly designated.

Liaison With Nursing

In addition to a routine contribution to the education program of the nursing staff, we also have a liaison committee between nursing and pharmacy. This committee meets often enough so that minor questions are answered before they assume major proportions. The questions and answers arising in this committee are reduced to writing so that there will be no misinterpretation. Often a verbal answer becomes misquoted over a period of time. This committee also allows nursing administration to keep up to date on problems within their department for there are numerous occasions where a staff nurse may deal directly with the staff pharmacist without the nursing supervisors being aware that there is any problem. To illustrate a minor problem that arises: In our hospital we use the metric system exclusively. We also label according to the U.S.P. standards, *i.e.*, in increments of 15 mg., 30 mg., etc. The equivalent of 2 grains is labeled 0.12 Gm., not 0.13 Gm. Recently an ampul was received from a manufacturer labeled 130 mg. representing 2 grains of medication. The nurse is used to injecting 120 mg. so that to her this ampul contained an excessive amount of drug. She tried to measure in her syringe 12/13ths of the volume. Not only was she wasting her time but the patient was not getting the full dose, albeit in this case the difference was small. The staff pharmacists had dispensed the ampuls because they knew that the dosage was correct. They forgot the mental trauma it would give the student nurse and her older sister who were just becoming proud of the fact that they were no longer thinking exclusively in the apothecary system. This problem required a relabeling of the ampul and an inquiry to the company as to why our specifications were not met.

Amber Glass

There is a safety factor in using amber glass bottles, besides protection from light and moisture. Since the bottle is amber, the nurse is forced to read the label in order to determine the contents. This is a much safer procedure than the short cut normally taken with the flint bottles where the label often is not carefully read if the preparation can be identified by color. More than once a red solution of phenol has been mistaken for a red mouth wash. Not only may the hospital have the same color for more than one solution but the color used to identify the same solution may vary from hospital to hospital.

The most important point to remember always is that a spirit of cooperation between pharmacy and nursing will make it easier to discover and put into practice an ever increasing number of systems for control and safety.

Sir Hugh Linstead addresses Opening Session of the General Assembly

INTERNATIONAL PHARMACEUTICAL FEDERATION

a resume of the Brussels Meeting

► MORE THAN 1,000 PHARMACISTS from approximately 40 countries convened in Brussels, Belgium, during the week of September 7 to participate in the 17th General Assembly of the International Pharmaceutical Federation and the 18th International Congress of Pharmacy. The sessions were opened September 8 by Sir Hugh Linstead in the Great Amphitheater of Brussels University in the presence of a representative of the King of the Belgians and of ministers and other state officials.

In his opening remarks, President Linstead emphasized the importance of the independent professional man in the practice of pharmacy and called upon all present to exercise their individuality and, in dealing with patients, to offer understanding, compassion, and a helping hand as an integral part of pharmacy service.

Professor R. Ruyssen (Belgium), President of the Scientific Section, told the assembly that the problems of pharmacists in their scientific capacity were numerous and becoming increasingly difficult due to the rapid evolution of scientific knowledge. He expressed the hope that the need for specialists would not make pharmacists narrow in their viewpoints. Ninety-nine papers were presented before the Scientific Section.

Highlighting the meeting of the General Assembly were the reports presented by the Commission on the Practice of Retail Pharmacy. Prepared under the direction of Dr. Frank Arnal of France, these reports discuss in a comprehensive manner the various aspects of the practice of retail pharmacy throughout the world. The printed reports, comprising approximately 180 pages, were distributed at the Congress.

Press and Documentation Section

The Press and Documentation Section held two meetings under the chairmanship of Dr. Gallo of Italy. One of these was a joint meeting with the Scientific

Section during which the subject of pharmaceutical abstracts was discussed. Dr. Steiger of Switzerland, Miss Winifred Sewell, and Dr. Don E. Francke discussed problems and plans for the preparation of pharmaceutical abstracts. Following the presentations, a committee was appointed to work out a plan for the publication of international pharmaceutical abstracts and submit it to the Council of the F.I.P. The Committee appointed is composed of Dr. Steiger, Dr. Charial (France), Dr. Gallo (Italy), Miss Sewell (U.S.), Dr. Regnotto (Switzerland), Dr. Vaugnaux (Switzerland), and Dr. Francke (U.S.), Chairman.

The subject of "Drug Information Sources" was discussed by Miss Ann McCann. Following her presentation, the Press and Documentation Section appointed a committee to carry out the following objectives:

(1) To help revise and bring up to date the present published material on drug information sources, this to be done in collaboration with the pharmaceutical editors, educators, and librarians of the various countries; (2) To compile a list of names and addresses of reliable and valid documentation centers of the various countries in order to stimulate a constant flow of new documentation information; (3) To explore with the editor of the *Journal Mondial de Pharmacie* the possibility of having the revised list of drug information sources published, and the possibility of publishing annual supplements to the list; (4) To prepare recommendations to the pharmaceutical industry relative to issuing drug information on cards of standard size and format.

The Committee appointed to carry out these objectives consists of Dr. Gallo of Italy, Mr. Fitch of Great Britain, and Miss McCann of the U. S.

The Pharmaceutical Section of the Special Libraries Association was represented at the meetings by Miss Elizabeth Boykin, Miss Ann McCann, and Miss Winifred Sewell.

Other sections and groups of the F.I.P. which held meetings during the week included the Industrial Section, the Military Pharmacists Section, the Medicinal Plants Section, the International Commission of Specialties, the Secretaries of the Pharmacopoeia Commissions, the World Federation of Historial Pharmaceutical Societies, and the Hospital Pharmacists Section.

Officers Elected

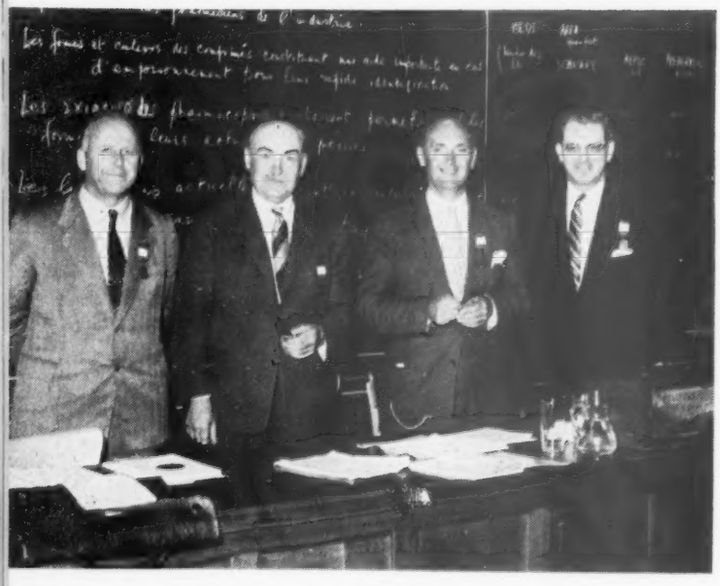
Newly elected officers of the International Pharmaceutical Federation include Sir Hugh Linstead of Great Britain who was re-elected President; Dr. J. W. Birza of The Netherlands and Dr. Don E. Francke of the U.S., elected Vice-Presidents; and Dr. Josef Winters of The Netherlands, elected Secretary-General, replacing Dr. Birza.

Delegates attending the General Assembly of the F.I.P. meetings

Dr. Franz Linner

Dr. Franz Linner, *the new president of the Hospital Pharmacists Section, is Chief Pharmacist at Landesapotheke Salzburg (Austria) Hospital. He was born in Wildon, Austria and attended the University of Graz in Graz, Austria. He holds a Doctor of Technical Sciences (Chemistry) degree; a Doctor of Law degree; and a Master of Pharmacie degree. Dr. Linner has held positions at the University of Graz, has served as a consulting engineer in pharmaceutical industry, and worked in an institute for health-vaccine for three years. He is also a member of the Austrian Pharmacopoeial Convention.*

Bureau of the Hospital Pharmacists Section. Shown left to right are Dr. Lehman; Dr. Jean Cheymol; Mr. Herbert Grainger; and Dr. Don Francke



During the Congress the Belgium pharmacists arranged numerous forms of entertainment, hospitality, and tours for members of the F.I.P. and their wives. These included receptions by the Mayor of Brussels and by the Order of Belgium Pharmacists, a ballet performance by the U.S.S.R. Moisseev Folk Dance Group, visits to the Brussel's World's Fair and to several historical sites in Belgium.

HOSPITAL PHARMACISTS' SECTION

Hospital pharmacists representing 14 countries participated in the Hospital Pharmacists' Section of the F.I.P. during the Brussels Congress. Under the able leadership of Professor Jean Cheymol (France), President of the Section since its organization in Rome in 1951, the hospital pharmacists attending the Congress enjoyed outstanding meetings which afforded opportunity for the exchange of ideas by those from many parts of the world. The Secretary-General Herbert Grainger (England) contributed much toward organization of the Congress as well as serving as interpreter in English and French. Dr. Lehman (Switzerland) one of the Vice-Presidents, acted as interpreter in German and English. A second Vice-President of the Section is Dr. Don E. Francke (United States).

Civil Responsibility of Hospital Pharmacists

Highlighting the Section Meetings was a symposium on the "Civil Responsibility of Hospital Pharmacists," in which representatives of ten countries presented papers on the legal requirements governing the practice of hospital pharmacy in their respective countries. Abstracts prepared in two languages other than the one in which the paper was presented were made available in booklet form. Following the symposium, Mr. C. C. Stevens, LLB., M.P.S., and a Barrister at Law, London, summarized the discussions in a most concise and thorough manner. Mr. Stevens' summary which aptly points out the similarities as well as differences in the legal controls affecting hospital pharmacy practice in the countries reporting, appears as part of this report.

Hospital pharmacists in the United States were represented in this symposium by Dr. George F. Archambault, Chief, Pharmacy Branch, U. S. Public Health Service, Washington, D. C. In his paper entitled "The Legal Responsibility of the Hospital Pharmacist in the United States," he pointed out that in the U. S. "the hospital pharmacist is liable for his own acts of negligence." Further, Dr. Archambault said, "He is also liable for acts of those under his supervision when their acts are in the performance of their duties." Elaborating on this, he suggested that the hospital is also responsible for his acts and although the administrator or hospital may tell the pharmacist "where"

and "when" to practice his profession, he can never tell him "how" to practice. The individual has been licensed by the state with regard to "how" to practice.

Summary Presented by Mr. Stevens

"Mr. Chairman, ladies and gentlemen, I am grateful for this opportunity to summarize the very excellent papers given to you today and to make some comparison between the different legal systems. Although a pharmacist and lawyer, I am not engaged in hospital practice but perhaps it is an advantage for you to obtain this comparison from an outsider who can take a more detached view. I do not intend to give any detail as you have received that fully in the course of the papers.

"The title of the symposium is "The Hospital Pharmacist's Responsibility Regarding Accidents Arising from Errors in the Pharmacy." This suggests that the main emphasis is on accident arising from mistakes, which, fortunately, is very rare and is only a small part of the hospital pharmacist's responsibility. I am glad to note, however, that the speakers have dealt with the subject from a much wider point of view.

"You have been able to consider only a small number of countries, *i.e.* Spain, Austria, United Kingdom, Belgium, France, Switzerland, Canada, (Quebec), U.S.A., Sweden and Germany. This is a representative selection, however, and may well be taken as an overall pattern.

"The countries may be split into three groups:

1. Those having a legal service derived from Anglo-Saxon Common Law.
2. Those based on Roman Civil Law or the Napoleonic Code, and
3. Those which cannot be classified into the other two groups.

In the first is the United Kingdom (except Scotland), Canada (except Quebec) and the U.S.A. (except Louisiana) and one might well add Australia, New Zealand, parts of Africa, the Republic of Ireland, and the Commonwealth to a great extent. Under group two would be placed much of Europe and Central and South America, whereas group three would embrace Scandinavia and Germany.

"Many of the differences in the legislation arise from a different approach to the control of the profession. Whereas under the civil law systems the tendency has been to give pharmacy a professional standing over a large number of years and control it by legislation as a liberal profession, in the common law world the protection of pharmacy has grown as a subsidiary to the control of toxic and dangerous drugs.

"To compare, there are only two responsibilities common to all countries. There is the responsibility for the control of dangerous drugs (narcotics) and this is common because it is based on rules set up by the World Health Organization. All pharmacists in all countries are also responsible under their criminal code for wilful acts or negligent omissions.

Members of F.I.P. Council gather before the Secretariat

Informal gathering of F.I.P. Council

Military pharmacists honor the Unknown Soldier

"With the exception of possibly some Canadian provinces, all those countries mentioned today subject their pharmacists to disciplinary control under their professional bodies. It may be that the Canadian provinces will develop this as new legislation is placed on the statute book and one might well note the difference between the Republic of Ireland and the United Kingdom where the older legislation in the former does not subject the pharmacist to professional disciplinary control, whereas in the latter this is so under the 1933 Pharmacy Act.

"As I have said, all are subject to the criminal law for malice, wilful misfeasance and negligence, but there really is no difference between the position of a hospital pharmacist and other members of the community.

"A responsibility exists for negligence but the position of the hospitals and the pharmacist as joint tortfeasors varies between the different countries. It should be noted that there is special pharmaceutical legislation governing the conduct of hospital pharmacists in Austria, United Kingdom, Belgium, France, Quebec, and some cantons of Switzerland.

"It is interesting to note the variation in the age of pharmaceutical legislation, for example Spain 1860, Belgium 1885, France 1943, Austria 1906, United Kingdom 1933, Sweden 1938, with variations in Canada and Switzerland between the provinces and cantons.

"Inspection of hospital pharmacists takes place in Spain, Austria, and France, and it is always a debatable point whether such is desirable. It is my personal opinion that inspection of hospital pharmacists is good, not because it suggests the authorities consider the hospital pharmacist must be policed but because it makes for cooperation between the governing body and the hospital pharmacist and does show to the lay administrator in the hospital that the pharmacist has professional responsibilities apart from the employer/employee relationship.

"Insurance is usual in Austria, Belgium, and the United Kingdom, and again, it is a debatable point whether one should insure as a hospital pharmacist or not. Speaking as a lawyer, I would say that regardless of whether the law holds the individual pharmacist or the hospital responsible for negligence, it is a wise precaution for the pharmacist to secure insurance, preferably through a professional association.

"In Austria no dispensing by auxiliaries is allowed and this, again, is a subject that could give rise to much discussion. It is probably impossible under present economic conditions for a pharmacist to do all the work of his department and, providing his supervision is adequate, I would think the employment of auxiliaries is justified.

"Finally, may I point out to you that responsibility and privilege go together and that you cannot have one without the other. If you insist on the privileges and rights of a qualified pharmacist in hospital work with a decided place in the community, you must be prepared to accept full responsibilities for your acts and not try to avoid them or pass them on to other persons or bodies. The papers which you have read and discussed today are interesting but should be only a beginning. There is a vast field for study and the preparation of a documentation aiming at what is desirable and what is attainable in legislation affecting hospital pharmacy. Today you have had intermingled that which is, that which might be, and that which should be. I ask that your section should give this subject a systematic study and prepare recommendations that would be of benefit to hospital pharmacy, pharmacy as a profession, and the community whom you serve."

Coloring of Tablets

Another subject considered by the Hospital Pharmacists' Section was a "Report on the Coloring of Tablets." Presented by the Secretary-General, Mr. Herbert Grainger, it was pointed out that a statement pre-

pared by the Section of Pharmacists in Industry had been sent for consideration by the hospital pharmacists. Here, the industrial pharmacists ask that there be no limitation in color and sizes of tablets since such presents an infringement of professional freedom. Since the statement was to be presented to the F.I.P. Council at the Brussels meeting, hospital pharmacists discussed areas of concern, particularly therapeutic value and safety to patient, and suggested that the points raised by the industrial pharmacists were an infringement on hospital pharmacy practice. Following a thorough discussion it was concluded that a policy whereby no limitations in color and size for tablets would present some major areas of problems in hospital pharmacy practice. As a result, a resolution expressing the views of the hospital pharmacists was drafted and presented to the F.I.P. Council during the Congress.

Concluding the papers presented to the Hospital Pharmacists' Section was one on a study carried out in Great Britain to determine the required space and equipment for a hospital pharmacy. This was presented by Mr. J. W. B. Fish, President of the Guild of Public Pharmacists (England). Mr. Fish presented background on the study, undertaken by a Research Committee, on which an architect and an engineer, as well as hospital pharmacists, were members. In the study, now available in booklet form, basic requirements are suggested for the various departments of the Pharmacy, including the dispensary, aseptic unit, preparation room, stores, office and staff room. The area of the Pharmacy is suggested at 7.5 square feet per bed with the following range in the categories according to bed size: 850 square feet for 100 beds; 2,200 square feet for 300 beds; and 4,500 square feet for 600 beds.

Council of Hospital Pharmacists' Section

Two official meetings of the Council of the Hospital Pharmacists' Section were held during the Congress. Here each country holding membership in the Section is represented by a voting delegate who may be accompanied by another representative from the country. The United States was represented by Secretary Gloria Francke who had participated in the two previous Congresses held in 1953 and 1955 and by Dr. George F. Archambault, a past president of the ASHP. Dr. Don Francke, Editor of the JOURNAL, is also a member of the Council as the result of currently serving as a Vice-President of the Section.

A report of the Secretary-General covered the status of the Section with regard to membership, finances, and work of the Bureau which is made up of the officers of the Section. Also, Mr. Grainger reported on his participation in a meeting of the F.I.P.Council in Opitia, Yugoslavia last September. He served as a representative of the Section in the absence of Professor Cheymol who was unable to atend.

Election of President and Bureau

The Section's Constitution and By-Laws provides that officers (members of the Bureau) serve through two Congresses. At the Brussels meeting it was necessary to elect a president to replace Professor Cheymol and a Vice-President to replace Dr. Lehman. On the recommendation of the Bureau and approval by the Council, Dr. Franz Linner of Salzburg, Austria, was elected president. To replace Dr. Lehman as vice-president, the Section elected Dr. San Martin of Barcelona, Spain. As a result of the election, the Bureau of the Section of Hospital Pharmacists is made up of Dr. Franz Linner (Austria); Dr. Don Francke (United States); Dr. San Martin (Spain); and Mr. Herbert Grainger (England).

Special tribute was paid to Professor Cheymol during the final session of the Congress. In recognition of his devoted attention to the work of the Section, Dr. R. Freudweiler (Switzerland) presented a tribute on behalf of the membership. In response, Professor Cheymol expressed joy in knowing that the work of the Section will continue and praised Secretary Grainger for his part in organizing the meetings. Concluding, he suggested that the hospital pharmacists are analogous to a family having the same aims, hopes and ambitions throughout.

1960 Congress

Another duty of the Council was to initiate plans for the 1960 Congress which is scheduled for Copenhagen, Denmark. President Cheymol asked that suggestions for a general subject and a technical subject be transmitted to the Secretary. Delegates were also asked to confer with hospital pharmacy organizations in their respective countries. Discussions at the Brussels meeting indicated that a probable subject for presentation at the 1960 meeting would be listed under the title "Recruitment and Qualifications of Hospital Pharmacists." Each country represented in the Section will be asked to contribute.

Countries represented in the Section on Hospital Pharmacy at the 1958 Congress included the following: Belgium, Canada, China, Denmark, France, Germany, Great Britain, Italy, Portugal, Spain, Sweden, Switzerland, United States, and Yugoslavia.

Hospital pharmacists from the United States participating in the meetings included: George F. Archambault (D.C.); Alex Berman (Mich.); Claude Busick (Calif.); Halcyone Collier (S. Car.); Don E. Francke (Mich.); Gloria Francke (Mich.); Ursula Heyer (Md.); Marie B. Kuck (Calif.); Thomas F. Madden (Colo.); Nelly A. Nigro (Calif.); Sister Mary Teresa (Okla.); and Agnes Young (N.Y.).

recommendations for

REDUCING STAPHYLOCOCCAL INFECTIONS

in hospitals

► EARLY DETECTION OF STAPHYLOCOCCAL infections in hospitals, rigid measures to prevent their spread, and increased research to find better methods of preventing and treating them have been recommended by the National Conference on Staphylococcal Disease, the Public Health Service reported today.

The Conference, co-sponsored by the Public Health Service and the National Research Council, met in Atlanta, headquarters of the Communicable Disease Center of the Public Health Service, September 15, 16 and 17. It was attended by delegates from 59 professional organizations and numerous authorities on various aspects of the infection problem.

Purpose of the meeting, as outlined in the opening address by Dr. Leroy E. Burney, Surgeon General of the Public Health Service, was to review what is now known about and to recommend what can be done to control staphylococcal infections which are acquired by hospital patients. These infections do not respond to the penicillin and other antibiotic drugs that kept them under control until recently.

The conference delegates agreed that the drug-resistant infection is now a problem in practically all hospitals, not only in the United States, but throughout the world. Serious epidemics, although infrequent, have cropped out unexpectedly in many hospitals.

Usually starting in surgical wards and in nurseries for newborn infants, the disease is spread through the hospital and out into community by these patients, many of whom show no symptoms, such as boils and abscesses, until after they leave the hospital. Fear of causing public alarm which might deter persons from getting needed hospital care has caused some hospitals to attempt to hide their problem. However, hospital administrators who attended the conference reported a growing awareness that open recognition of the problem will contribute to its control.

Because staphylococcus germs are ubiquitous—it is estimated that over 50 percent of the population carry one or many strains on their skins and in their noses—and because the drug resistant strains permeate hospitals and their personnel, the problem of preventing serious infection, the delegates agreed, sifts down to finding how the dangerous strains are spread and building barriers against them. Although the delegates recognized that contaminated air and furnishings could be responsible for spreading the infection, the prevailing opinion was that personal contact is certainly one of the most common causes. Most of their recommendations were therefore concerned with reducing this cause.

Their major recommendations included:

1. Organization of infections control committees in all hospitals. These committees should have sufficient authority to investigate infections and establish and enforce hospital policies. They should include representatives from all services and divisions, all of whom should have a keen interest in the problem, and should meet at regular and frequent intervals. Committee members should be responsible for seeing that hospital personnel are properly trained in anti-infection procedures and that these procedures are followed in day-by-day activities. Local health officials should be asked to serve as consultants to these committees.

Organization of infections control committees by local

Report of a National Conference on Hospital-Acquired Staphylococcal Disease held in Atlanta, Ga. on September 15. The Conference was sponsored by the U.S. Public Health Service— Communicable Disease Center and the National Academy of Sciences — National Research Council. The ASHP was represented at the Conference by President Robert C. Bogash.

medical societies, with representatives from the medical, nursing and housekeeping staffs of all the hospitals in the area, was considered a necessary supplement to the intra-hospital committee.

2. Use of an "infection log" in which all infections are classified and pertinent data recorded. This would make it possible to determine whether infections are increasing and would also help the control committee to evaluate the effectiveness of its measures.

3. A plan for excluding from contact with patients all personnel who have boils or other active staphylococcal lesions or who are known to be carriers of dangerous and epidemic strains Periodically in nurseries for the newborn and at times of epidemics in other areas of the hospital, cultures should be taken of personnel in order to detect, remove and treat dangerous carriers. During epidemics, persons found to be carriers of dangerous epidemic strains should be removed from contact with patients until they are free from infection.

4. A local plan for establishing criteria on the discriminate use of antibiotics in medical and surgical treatment. Routine use of antibiotics to prevent possible infection in patients was considered highly undesirable.

5. Arrangements to store cultures from staphylococcal infections. This would help the hospital to trace the source of an epidemic if one should occur. The length of time these cultures should be stored should be decided by the infections control committee.

6. Isolation of infectious patients, particularly those with pulmonary and skin infections, even if this means expanding isolation facilities. More emphasis on home care, in preference to hospitalization, for patients with minor illnesses or with diseases that make them particularly vulnerable to staphylococcal infection was also suggested. Diagnostic and treatment procedures in the hospital that open the skin—which is the normal barrier to staphylococcal infection—should be kept to a sensible minimum.

7. Special precautions in the nurseries for the newborn, such as elimination of overcrowding and the maintenance of rigid sanitary standards. Bathing babies immediately after birth with an antiseptic, such as hexachlorophene, was also recommended.

Since babies are the principal source of spreading the disease into the community, sample surveys of families at periodic intervals after their babies have been discharged from the hospital were advised. Such surveys can be made by telephone, mail questionnaire or home visit. Early detection of nursery-acquired infection would help to prevent further spread. These surveys would also indicate whether the hospital has an infection problem which it has not recognized because of the late appearance of symptoms.

8. Development of intensive and continuous training programs for professional and subprofessional members of hospital staffs. To aid in these programs, the delegates recommended that the American Hospital Association, the American Medical Association and the Public Health Service collaborate in producing and distributing training films and other educational materials. They also proposed that the Public Health Service produce and distribute widely to hospitals a manual containing all available information on environmental disinfection and on the sterilization of equipment, linen and other objects used with patients.

9. Strengthening of laboratory services. By the phage typing process, it is possible to identify dangerous strains of staphylococcus and thus enable hospitals to trace the source of infection. However, since it is not practical for many institutions to do this, it was recommended that the Public Health Service, through its own facilities and by assisting State and local health department laboratories, should aid in performing phage studies, particularly in epidemic situations.

10. Expansion of research. Areas in which the delegates felt more knowledge was needed before recommendations could be made included:

The effect of environmental contamination upon the spread of infection.

Desirable features in the design and construction of hospitals and hospital equipment. The delegates believed that not enough is known about environmental factors in the spread of infection to warrant recommending extensive or expensive changes in existing structures.

The value of making staphylococcal infection a reportable disease. (Several states now require reports on all such cases and results in these states will be studied.)

The group also issued strong recommendations for basic research to determine why some people are more susceptible to infection than others and how a person's resistance to it can be strengthened; also to find better methods of treating diseases caused by virulent and epidemic strains and ways of minimizing the development of drug resistant strains.

Dr. Burney pledged the Public Health Service to do everything within its power to put these and other recommendations made by the conference into effect. He pointed out that the Public Health Serivce has already taken action on several of these measures. Applications for grants to carry on staphylococcal research are being given priority consideration by the Advisory Councils of the National Institutes of Health and, through a special appropriation of one million dollars earmarked for the study of staphylococcal infection, grants will be made this fall to support the most promising projects.

To assist States and communities in the rapid identification of epidemics, The Communicable Disease Center is preparing diagnostic reagents on a large scale. The Center has also assumed responsibility for operating the National Reference Center for Staphylococcal Phage Typing. Through its Epidemic Intelligence Service, the Center makes available specially-trained physicians and nurses to help trace the source of epidemics and bring them under control. Training programs for laboratory and other personnel of State and local health departments have also been expanded by the Center.

Highlights of other papers presented at the Conference include:

Dr. R. Keith Cannan, Chairman of the Division of Medical Sciences of the National Research Council, co-sponsor of the Conference, explained that the Council's interest in the problem stemmed from its study of the treatment of traumatic injuries, particularly burns. "Beyond this," he said, "the Division shares your chagrin that the irrepressible staphylococccus should be proving so resistant to discipline and should be casting a shadow on our vaunted triumphs over infectious disease. Maybe our heads have been turned by past successes but when the turned head is in danger of loss of face, it is surely time for a little reparative work."

Dr. R. E. O. Williams of the Public Health Laboratory Service, London, England, described the experience of the British who were the first to isolate antibiotic resistant strains of staphylococcus. He reported sample surveys in England which indicate that, apart from epidemics, about 5 percent of clean wound operations and 10 to 15 percent of newborn babies develop septic lesions. Describing the "wound books" which some English hospitals maintain on all opera-

tions, he said "it is our feeling that systems which simply require notification of cases of infection are less likely to give complete records than those that demand recording of the outcome whether infection develops or not." He also advocated painting the umbilical stumps of newborn babies, a frequent site of infection, with antiseptic dye. Summarizing these and other English practices he said: "There is no one way in which staphylococci spread in a hospital and there is no one prophylactic method by which spread can be prevented. The routes of infection are numerous and probably often devious and the precautions needed are many and complex . . . Our preventive measures have therefore to minimize the endemic level, to prevent the emergence of epidemics, and to terminate epidemics when they occur."

Dr. Robert J. Anderson, Chief of the Communicable Disease Center, Atlanta, cited the provision of adequate laboratory service, staffed by well trained bacteriologists and technicians, within the hospital and at all levels of organized public health as a major need that must be met in order to apply the best available methods of controlling the disease. Noting that the indiscriminate use of antibiotics in medical treatment has been deplored by clinicians for years, he said "the time is perhaps ripe for the positive approach—the formulation and promulgation of acceptable standards for the discriminate use of antibiotics."

Dr. Vernon Knight, Associate Professor of Medicine, Vanderbilt University School of Medicine, Nashville, described a series of studies which indicated that, after patients have been in the hospital for a few days, the staphylococcal strains which they normally carry on their skins or in their noses are replaced by the drug-resistant strains which prevail in the hospital environment. After discharge from the hospital, the process reverses, with the normal strains replacing the drug-resistant strains.

Dr. Thomas E. Shaffer, Professor of Pediatrics and Preventive Medicine, Ohio State University College of Medicine, Columbus, speaking on outbreaks of infections in nurseries, noted that they began about 12 years ago in England, subsequently occurred in Canada, Australia and the U. S., and finally throughout the world and were characterized in their early stages chiefly by conjunctivitis and impetigo. "Failure to recognize these commonplace and seemingly unimportant lesions as forerunners of disastrous epidemics in which serious complications have occurred has allowed epidemics to progress before control measures were established," he said. One particular strain, 80/81, is responsible for the majority of these epidemics in all parts of the world.

Dr. Chester W. Howe, Associate Professor of Surgery at Boston University School of Medicine, discussed staphylococcal disease on surgical services. "In terms of morbidity, prolongation of hospital stay, economy, necessity for further surgical risk and particularly from the point of view of massive contamination of the hospital environment . . . post-operative staphylococcal infections are a particularly important problem in surgery," he said. Although the pathways by which staphylococci gain access to a clean wound are not known, he reported suggestive evidence which indicates that the majority of such infections are seeded in the operating room. He urged extensive study of the problem and said that "there is no doubt that its significance is of such extent that it warrants the expenditure of the large amount of money and effort which would be required."

Dr. David E. Rogers, Associate Professor of Medicine at the New York Hospital-Cornell Medical Center in New York City, stated that, "in contrast to the experience of pediatric and surgical services, staphylococcal infection in non-operated adults on medical wards are non-epidemic, occur in a small number of patients, and have been relatively constant in incidence for a number of years."

Dr. Frederick H. Wentworth, Medical Director of Disease Control Activities of the Ohio Department of Health, Columbus, cited several case histories indicating the seriousness of family infections resulting from patients carrying the disease home from the hospital. In one family, an infant was discharged from the hospital in October, 1954, and soon showed symptoms of a hospital-acquired impetigo. From then until July, 1958, there has never been a time when one or more of the five members of the family did not have some infection and the cost of their care, exclusive of hospital bills, has been more than $1500.

Dr. John E. Blair, Bacteriologist at the Hospital for Joint Diseases, New York City, pointed out that it is not practical for most hospitals to do their own phage typing of strains since it is hard to maintain the phages and requires highly trained personnel to do the typing. He advocated the use of regional laboratories as means of keeping better control over the quality of phages and of assuring the consistency of tests. He suggested that cultures be submitted only on a series of related sources, not on isolated cases.

Dr. John C. Colbeck, Chief of Service in the Pathology Department of Shaughnessy Veterans Hospital, Vancouver, B. C., Canada, suggested that small hospitals may afford especially good opportunities to study how infections spread. "In large hospitals, the possible routes of spread are so numerous that the probable method of spread is all too often indeterminable . . . It might be wise for public authorities to consider the establishment of research units, with full laboratory facilities, in the smallest hospitals."

Dr. Dean A. Clark, General Director of Massachusetts General Hospital, Boston, declared that hospital acquired staphylococcal disease is *always* a community problem, *never* limited to the four walls of a particular hospital, since many, if not most, infections in patients become apparent only after discharge. He urged that hospital administrators plan to follow up at least a random sample of discharged patients and make suitable arrangements with their medical staffs, other hospitals in the area, and the health department to collaborate in such follow-up in order to assure the detection of all related cases.

Leaders of the work groups who developed recommendations based on the data presented by the speakers were Dr. Warren E. Wheeler, Professor of Pediatrics, Ohio State University College of Medicine, Columbus; Dr. William A. Altemeier, Professor of Surgery, University of Cincinnati College of Medicine, Cincinnati; and Dr. Ivan L. Bennett, Jr., Professor of Pathology, Johns Hopkins Hospital, Baltimore.

Chairmen of the general sessions were Dr. Isidor S. Ravdin, Professor of Surgery, Hospital of the University of Pennsylvania, Philadelphia; Dr. Morris Tager, Professor of Bacteriology and Immunology, Emory University, Atlanta; and Dr. Anderson.

Dr. Harry F. Dowling, Professor of Medicine, University of Illinois College of Medicine, Chicago, summarized the conference. Discussants of papers were Dr. Mark H. Lepper, Professor of Preventive Medicine, University of Illinois College of Medicine, Chicago; Dr. Reimert T. Ravenholt of the Seattle-King County Department of Public Health, Seattle; and Dr. H. Taylor Caswell, Clinical Professor of Surgery, Temple University School of Medicine, Philadelphia.

BULLETIN OF THE JOINT COMMISSION ON ACCREDITATION OF HOSPITALS
660 North Rush Street, Chicago 11, Illinois, Mich. 2-2349

Standards of the
Joint Commission on Accreditation of Hospitals

INFECTIONS IN HOSPITALS

by KENNETH B. BABCOCK

► THE PRESENCE OF INFECTIONS IN HOSPITALS of various kinds will always be with us and we must accept it. To keep these infections to an absolute minimum is of paramount concern to all. This can be done only through continuous education and re-education of all hospital personnel, to carry out known control methods with strict discipline at all times.

The Commissioners of the Joint Commission on Accreditations of Hospitals think that the matter is of such grave importance that they urge hospitals to study their own problem and set up systematic controls. The Commission cannot dictate what these controls should be. However, this Bulletin suggests an approach which might be used as a pattern. Each hospital should develop its own methods of study and control to meet its specific needs.

Committee on Infections

The Commissioners recommend that every hospital have an 'Infection Committee' charged with the responsibility of investigation, control and prevention of infections within hospitals. Membership on this committee should include the medical staff, administration and nursing service personnel. Where possible, participation with community health organizations such as health departments, medical societies and hospital councils is recommended, because the problem is not necessarily confined to the hospital itself. The responsibility of the committee can appropriately include the following:

A. Establishment of definite controls. Control measures must have validity.

B. Establishment of techniques for discovering infections on patients who have left the hospital:

1. Trace source of infection for which a patient may be admitted.
2. Periodic sampling by letter, card, call or visit of discharged patients.

C. Make certain that bacteriologic services in or out of the hospital are available.

D. Establish a system of reporting all infections among patients and personnel and keep records as a basis for studying the source of infections.

Review Existing Practices

A. Clean and aseptic technique should be practiced on all services of every hospital at all times. This includes the following procedures involved in patient care:

1. Re-check all dietary and food handling procedures, such as proper dishwashing techniques, preparation and disposal of food, refrig-

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eration, sanitation of ice bins, and the disinfection of contaminated utensils and equipment. There should be a special technique for infected or 'isolation' patients.

2. Review laundry practices. This involves linen control, blanket control, special technique in handling and disposal of contaminated laundry in patients' rooms, nursery, operating room and the laundry itself.

3. Study carefully methods of handling and disposing wastes and excreta of sputum, feces and urine, and the environmental wastes of dressings, floor sweepings and food.

4. Re-study traffic controls and visiting rules in all areas, especially in operating rooms, nurseries and on obstetrical floors. They must be kept at an absolute minimum. Diligent maintenance of general cleanliness in all areas of the hospital, especially in service areas like utility rooms, janitors' closets, trash closets, etc.

5. Check sources of air pollution. Air conditioning and ventilating units should be inspected regularly for contamination through intake sources, screens and filters (wet or dry). Hospital floors and corridors must be considered as potential spreaders of infection. Wet mopping is far preferable to dry sweeping. There should be a definite practice established for the care and cleanliness of the mop after each usage; a dirty mop spreads infection.

6. Routine, periodic culturing of autoclaves and water sterilizers, which is a must for all hospitals.

B. Educate and orient all personnel in the practice of aseptic techniques. An informed worker is a better and a safer worker. It is especially important that physicians not consider themselves the exception to the rule, but both teach and set a good example for all. There can be only one accepted standard of practice. The following practices are some which should be studied:

1. Hand washing and scrubbing practices with review of proper soaps and detergents. Sinks with foot or knee controls in operating rooms, nurseries and isolation rooms are especially vital.

2. Proper gown techniques.

3. Proper mask techniques.

4. Proper dressing cart techniques and procedures.

5. Proper packaging of all goods, materials and instruments for steam sterilization.

6. Proper packing of autoclaves. No autoclave should be so tightly packed that the packages are either tight together or tightly pressed against the walls. It is especially important that all impervious containers such as cans, jars, test tubes and deep trays be so placed in the autoclave that they lie on their sides, or with the opening downward, which prevents the trapping of air and failure of sterilization at the bottom of the container. Improper packaging and improper packing by unskilled people can undo the finest autoclaving precautions.

Control Use of Antibiotics

The medical profession has become increasingly aware of the problems created by the routine and indiscriminate use of antibiotics. Hospital surveys by the Commission reveal that the infection rate in most hospitals using antibiotics routinely is higher than in those not doing so. The common denominator in hospital infections appears to be the resistance of bacteria to antibiotics used on the individual case. From this, the conclusions drawn are that this increase in infections is due to the routine, indiscriminate use of preventive antibiotics in the absence of infection, and the indiscriminate use of antibiotics in the presence of infection without preceding cultures and sensitivity tests. In this latter type of case it is more than useless since without an adequate antibiotic, one may only inhibit the infectious agent and also at the same time stimulate the growth of other organisms which then became pathogenic.

Recognize the Human Factor

Any machine or equipment is only as good as the individual using it. All the rules, regulations and controls mean nothing if hospital personnel do not constantly check themselves for human errors. Continuing education and eternal vigilance in the cause, effect, and elimination of infections, in addition to instituting proper control methods, are important.

The recognition and elimination of infections in patients and personnel are thought by many to be the most important single facet in the control of infections. No hospital employee with a carbuncle, boil, acne, paronychia, fungus infection, upper respiratory infection, diarrhea, common cold, or in fact any infection, should be allowed in contact with patients. The reverse is true of infected patients. They must be isolated. One of the commonest avenues overlooked is by the physician not notifying the admitting office of the presence of infection already in the patient, or the admitting office or floor nurse not recognizing its very obvious presence on admittance.

There is no single factor responsible for so-called hospital infections. There are many factors and causes and each should be investigated. The Joint Commission cannot supply and does not have literature on special techniques and treatments. For specific articles refer to medical and hospital library indices on the subject.

YOUR ROLE

in Revising the Minimum Standard

Dear ASHP Member:

The Minimum Standard for Pharmacies in Hospitals represents a guide by which we may evaluate the pharmaceutical service of our hospitals.

The present Minimum Standard was first presented to the Society in 1948. During the following year the individual members of the ASHP were asked to submit their comments and criticisms of the Standard. It was finally approved in 1950.

The changes which have taken place in our field over the past decade have made it necessary for another study to be made of the present Minimum Standard, so that areas for revision may again be determined. In order to accomplish this goal, last year's Committee on Minimum Standards developed a long range plan for revising the Standard. Briefly the plan is to collect the recommendations from the Affiliated Chapters and allied organizations, draw up the first draft of the new Standard, send this first draft back to the Affiliated Chapters and allied organizations for their review and criticism, and then draw up the final draft.

Since the revision of the Minimum Standard will play an extremely important role in the future of our profession, the ideas should represent the thinking of every hospital pharmacist in the American Society of Hospital Pharmacists. The total participation in the last revision was excellent. It was indicative of the wide-spread desire to improve the status of hospital pharmacy practice by a then relatively young organization. Those who participated in the last revision now have ten years of additional hospital pharmacy practice behind them, years which I am certain have brought many new experiences. And since the Minimum Standard was last revised, the Society membership has increased considerably, the new members bringing with them a multitude of new ideas.

The Committee would, therefore, like each of you to evaluate the present Minimum Standard and offer your recommendations for revision. You may wish to comment on only one of the six sections, or you may have suggestions for all of the sections. You may feel that the six sectional titles need revising with possibly some deletions, additions or consolidations. Whatever your suggestions may be, we would like to hear from you before February 1, 1959. We hope that your local chapter is working on the revision as one of its special projects, and if so you may submit your recommendations to your chapter president. If your chapter is not working on the revision, please submit your recommendations directly to the Committee on Minimum Standards, c/o Pharmacy Department, University of Texas Medical Branch, Galveston, Texas.

Your personal recommendations will represent an important contribution to the revision plan.

Sincerely,

Robert L. Lantos

Chairman, Committee on Minimum Standards

MINIMUM STANDARD FOR PHARMACIES IN HOSPITALS

with Guide to Application*

1. Organization

There shall be a properly organized pharmacy department under the direction of a professionally competent, legally qualified pharmacist whose training in hospital pharmacy conforms to the standards herein established by the Division of Hospital Pharmacy sponsored by the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

ELABORATION ON ORGANIZATION: The pharmacist in charge shall be responsible to the proper administrative authority of the hospital for developing, supervising and coordinating all the activities of the pharmacy department.

Obviously the pharmacy department must be integrated with the general services supplied by the hospital of which it is a part. Where outpatient service is given, the hospital pharmacy should include outpatient prescription service. A general compounding and dispensing laboratory is a prime essential for any hospital pharmacy service. Where manufacturing is carried on on more than a small compounding and dispensing scale, a separate manufacturing laboratory must be available. Where the pharmacy is depended upon for the storage and supply of ordinary and extraordinary medical and surgical equipment, facilities for storage and handling such equipment must be adequate and should not encroach upon the space required for good pharmaceutical technic. Where the pharmacy is depended upon for scientific, administrative, mechanical and educational activities not usually associated with the practice of pharmacy, adequate facilities for such activities must be available.

Departmentalization of the hospital pharmacy should follow good administrative procedure integrated with the administration of the hospital in general.

The organizational structure of the pharmacy department will vary in different hospitals, depending upon the size and character of the institution and it is not the intent of the Minimum Standard to cast all pharmacy departments in the same mold although it is its intent to assure the establishment of fundamental principles, which will enable competent pharmacists to operate with sufficient freedom to supply the demand for adequate pharmaceutical service.

2. Policies

The pharmacist in charge, with approval and cooperation of the director of the hospital, shall initiate and develop rules and regulations pertaining to the administrative policies of the department. The pharmacist in charge, with the approval and cooperation of the Pharmacy and Therapeutics Committee, shall initiate and develop rules and regulations pertaining to the professional policies of the department.

ELABORATION ON POLICIES: Only those orders and prescriptions originating within the hospital should be filled by the hospital pharmacy. Prescriptions written by physicians who are not members of the hospital staff should not be filled by the hospital pharmacy. Regulations pertaining to the dispensing of medications to hospital personnel should be formulated and enforced.

Administrative and professional policies may of necessity overlap. This is unavoidable in the formulation of any set of standards. The spirit of this Standard is one of helpful cooperation and this should be kept in mind by the administrator, the pharmacist, and the examiner when the standard is interpreted. Reference to policy may occur in other sections of the elaboration of this Standard because it may be more appropriate to refer to it there.

3. Personnel

The pharmacist in charge shall be well-trained in the specialized functions of hospital pharmacy and shall be a graduate of an accredited college of pharmacy or meet an equivalent standard of training and experience as set forth in the supplement to these standards. He shall have such assistants as the volume of work in the pharmacy may dictate. These assistants shall include an adequate number of additional registered pharmacists and such other personnel as the activities of the pharmacy may require to supply pharmaceutical services of the highest quality. All members of the staff of the pharmacy shall be competent, of good moral character and mentally and physically fit to perform their duties acceptably.

ELABORATION ON PERSONNEL: The personnel listed below represent the ultimate in hospital pharmacy staffing and it is realized that varying numbers and components of pharmacy staffs will be required, based on size and scope of operations of each activity.

1. Chief Pharmacist
2. One or more assistant chief pharmacists
3. Staff pharmacists
4. Intern trainees (where intern program has been activated)
5. Nonprofessionally trained pharmacy helpers
6. Clerical help

The pharmacist in charge, the assistant chief(s) and the staff pharmacists shall be graduates of approved[1] schools of pharmacy, and currently registered in one of the 49 states, the District of Columbia, or territories of the United States. The pharmacist in charge shall have a Bachelor of Science degree and have had at least one year's experience in hospital pharmacy. The additional pharmacists wherever possible shall have had experience in hospital pharmacy and preferably shall have completed an approved hospital pharmacy internship. This applies especially to the chief pharmacist and the assistant chief pharmacist(s). Registered pharmacists actively engaged in the practice of hospital pharmacy on or before January 1, 1950, who do not hold a Baccalaureate Degree, may satisfy the personnel requirements in part by evidence of extensive experience in hospital pharmacy, professional ability, membership in professional and scientific societies and with evidence in writing of their efficiency and capacity in hospital pharmacy as presented to the administration, superintendent, chief of service or medical staff.

Pharmacists in charge who have completed a three-year course and who do not have a B.S. degree shall have had five years' experience in hospital pharmacy. Those who have completed a two-year course in pharmacy, but have not received a B.S. degree shall have had ten years' experience in hospital pharmacy. In small hospitals where it may not be economically feasible to have a pharmacist devote full time to purely pharmaceutical matters, it is recommended that the pharmacist be a full-time staff member and assigned additional related collateral duties. In smaller organiza-

*The Guide to Application of the Minimum Standard for Pharmacies in Hospitals is an elaboration for the guidance of administrators and examiners, as well as hospital pharmacists. The Guide has not been submitted to the various organizations for approval. Note that the Standard appears in large type with the elaboration in small type following each section of the Standard.

[1]A school or college accredited by the American Council on Pharmaceutical Education. If graduation was prior to accrediting activity by the Council, the school or college shall have been a member of the American Association of Colleges of Pharmacy.

tions in which a pharmacist cannot be utilized on a full-time basis even with related collateral duties, a qualified pharmacist should be employed for a portion of each day. Consideration shall be given not only to the professional competence of registered pharmacists, but also to personality traits which will materially influence compatibility and cooperation with other members of the professional hospital staff. All registered pharmacists shall be urged to maintain membership in the American Pharmaceutical Association, the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS and other professional pharmaceutical societies and participate actively in their functions.

The selection of interns shall be on the basis of minimum standards established for the over-all intern program. In all instances incumbents shall be graduates and, where possible, registered pharmacists, and shall be assigned duties commensurate with their schooling and training.

Clerical and stenographic assistance shall be provided to assist with records, reports and correspondence.

The nonprofessionally trained pharmacy helpers whose work shall be largely of a mechanical and janitorial nature, incident or preparatory to the work of a pharmacist, shall be carefully selected, in view of their numerous contacts with members of the professional staff in the hospital. In order to insure the best pharmaceutical service as a protection to the patient, these helpers shall not be assigned duties which should be performed only by professionally trained registered pharmacists.

The hospital shall provide rules for employee conduct and the chief pharmacist-in-charge shall be responsible for the enforcement of such rules within the pharmacy.

The employment and discharge of employees in the pharmacy department shall be only on the recommendation of the pharmacist in charge.

A licensed pharmacist shall be on duty at all hours when the pharmacy is open and provision should be made for emergency pharmaceutical service.

4. Facilities

Adequate pharmaceutical and administrative facilities shall be provided for the pharmacy department, including especially: (*A*) the necessary equipment for the compounding, dispensing and manufacturing of pharmaceuticals and parenteral preparations, (*B*) bookkeeping supplies and related materials and equipment necessary for the proper administration of the department, (*C*) an adequate library and filing equipment to make information concerning drugs readily available to both pharmacists and physicians, (*D*) special locked storage space to meet the legal requirements for storage of narcotics, alcohol and other prescribed drugs, (*E*) a refrigerator for the storage of thermolabile products, (*F*) adequate floor space for all pharmacy operations and the storage of pharmaceuticals at a satisfactory location provided with proper lighting and ventilation.

ELABORATION ON FACILITIES: In those states where minimum equipment lists have been provided by the boards of pharmacy and other agencies controlling the practice of pharmacy, such minimum equipment must be available in the pharmacy for proper compliance with state laws and/or regulations.

Adequate office furniture, stationery, bookkeeping and stenographic supplies shall be provided. The systems of communication, messenger and delivery service maintained by the hospital shall extend to the pharmacy.

A modern pharmaceutical library shall be maintained. As a minimum, latest editions of the following shall be available:

- United States Pharmacopeia
- National Formulary
- New and Nonofficial Drugs
- United States Dispensary

Also, the library should contain recent editions of text and reference books covering the following fields:

- Pharmacy: theoretical and practical
- Chemistry: general, organic, pharmaceutical and biological
- Pharmacology, toxicology and therapeutics
- Bacteriology
- Biological stains and staining techniques
- Sterilization and disinfection
- Medical dictionary

The following journals shall be available:

- Journal of the Americal Pharmaceutical Association, both Scientific and Practical Pharmacy Editions
- American Journal of Hospital Pharmacy
- Journal of the American Medical Association

There should be maintained files containing literature on newer therapeutic agents, the house organs of pharmaceutical manufacturers, and their catalogs and price lists.

Floor space in the pharmacy should be guided by the suggested standards of the Hospital Facilities Division of the Public Health Service and approved by the Division of Hospital Pharmacy of the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.*

*Currently the Division of Hospital Pharmacy recommends the suggested standards of the Hospital Facilities Division of the Public Health Service.

5. Responsibilities

The pharmacist in charge shall be responsible for: (*A*) the preparation and sterilization of injectible medication when manufactured in the hospital, (*B*) the manufacture of pharmaceuticals, (*C*) the dispensing of drugs, chemicals, and pharmaceutical preparations, (*D*) the filling and labeling of all drug containers issued to services from which medication is to be administered, (*E*) necessary inspection of all pharmaceutical supplies on all services, (*F*) the maintenance of an approved stock of antidotes and other emergency drugs, (*G*) the dispensing of all narcotic drugs and alcohol and the maintenance of a perpetual inventory of them, (*H*) specifications both as to quality and source for purchase of all drugs, chemicals, antibiotics, biologicals and pharmaceutical preparations used in the treatment of patients, (*I*) furnishing information concerning medications to physicians, interns and nurses, (*J*) establishment and maintenance, in cooperation with the accounting department of a satisfactory system of records and bookkeeping in accordance with the policies of the hospital for (1) charging patients for drugs and pharmaceutical supplies, (2) maintaining adequate control over the requisitioning and dispensing of all drugs and pharmaceutical supplies, (*K*) planning, organizing and directing pharmacy policies and procedures in accordance with the established policies of the hospital, (*L*) maintenance of the facilities of the department, (*M*) cooperation in teaching courses to students in the school of nursing and in the medical intern training program, (*N*) implementing the decisions of the Pharmacy and Therapeutics Committee, (*O*) the preparation of periodic reports on the progress of the department for submission to the administrator of the hospital.

ELABORATION ON RESPONSIBILITIES: Following the principles of good management, the pharmacist should be assigned specific responsibilities together with the proper authority to carry them out.

The pharmacist is best qualified by education, training and experience to assume responsibility for the preparation and sterilization of injectible medication. The manufacture of injectible medication is a major responsibility which should be assigned only to those legally and professionally qualified. It is unwise for the hospital to place itself in an untenable position, legally and morally, by assigning this responsibility to unqualified and unlicensed personnel. By the same standard the pharmacist is the individual who should prepare the specifications for purchase of these medicaments if they are not manufactured in the hospital.

It is self evident that the manufacture of pharmaceuticals and the dispensing of drugs, chemicals, and pharmaceutical preparations should be the responsibility solely of the pharmacist and should not be entrusted to unqualified personnel.

The proper filling and labeling of all drug containers is an important task which should be centralized. Many errors leading to results detrimental and even fatal to the patient have resulted from the improper practice of assigning this responsibility to others. An inspection of pharmaceutical supplies on all services should be made with sufficient frequency to insure that medications are properly labeled and that the drugs being used have not deteriorated nor in any other manner become unfit for use. Normally a monthly inspection should be sufficient.

Certain emergency drugs should be available for rapid procurement at all times when the pharmacy is closed. A convenient method of handling this problem is to

establish a depot of emergency drugs readily accessible to the supervisor of nurses or other designated person. This situation may also be handled by having a pharmacist always available for emergency calls. However, even in this latter case it is still wise to maintain an emergency depot of drugs available to the supervisor of nurses since there may be times when the pharmacist cannot be reached or is too far from the hospital to obtain the medication as rapidly as required.

Narcotic drugs should be dispensed in strict accordance with Federal and State narcotic regulations. The pharmacist should, at all times, keep narcotic drugs in a locked compartment. He should maintain a perpetual record of the stock on hand and should record all narcotic drugs dispensed in such a manner that the final disposition of any particular item may be readily traced. The same procedure should apply to other regulated drugs under Federal and State laws.

The pharmacist should furnish specifications for the purchase of all drugs, chemicals and pharmaceutical preparations even though a purchasing agent may do the actual procurement through a centralized department. Since the pharmacist has the responsibility for the compounding, dispensing and manufacture of the drugs used in the hospital he should also have the authority to specify the drugs to be purchased. In large institutions with centralized purchasing, the pharmacist and the purchasing agent should work hand-in-hand, each recognizing the importance of the function of the other. In such a system it is essential that the pharmacist state the specifications for drugs to be purchased and to have authority to reject any article below standard or not complying with specifications so that the purchasing agent may be guided and assisted in his function. The pharmacist will also, in certain instances, wish to consult with the Pharmacy and Therapeutics Committee concerning specifications for drugs.

Since the potency of many drugs is affected by temperature, light, moisture and other conditions, the pharmacist should establish storage specifications for labile products and should be provided with adequate refrigeration facilities so that the pharmaceuticals affected by heat may be properly preserved.

The pharmacy should be the hospital's center for information concerning drugs. The pharmacist should be thoroughly familiar with the library at his disposal (as detailed in the section on facilities) so that, upon request, information may be secured promptly. Also, the pharmacist should be responsible for the systematic arrangement of this library and for additions to it as necessary. The pharmacy should, if possible, publish a circular or bulletin containing information on new drugs. This should be circulated to members of the medical and nursing staffs. Representatives from pharmaceutical firms calling on members of the hospital staff should make the pharmacy their first point of call to acquaint the pharmacist with the products they would like to promote, to learn how the products fit into the over-all pharmacy policy, and to become conversant with the regulations regarding the procedures to be followed when promoting pharmaceutical specialties in the hospital.

The establishment and maintenance of proper business records in the pharmacy is one of the major administrative duties of the pharmacist. The purpose of such records is to aid the pharmacist and the hospital administration in evaluating the efficiency and economy with which the pharmacy department is being operated, to insure that adequate direct or indirect charges for medication are apportioned, and to prevent needless waste through adequate control over the requisitioning and dispensing of medication and related supplies.

The accounting department should assist the pharmacist in establishing a proper system of business records. Charges for drugs and related supplies issued by the pharmacy to patients or to other units of the hospital should be credited to the pharmacy. All invoices for drugs and related supplies should be charged to the pharmacy. Administrative expense and other services rendered to the pharmacy should be charged to it. Services rendered by the pharmacy to other units of the hospital should be credited to the pharmacy.

A proper system of records supplies to the pharmacist basic information pertaining to the unit cost of drugs whether manufactured or purchased. It should include a consideration of inventory, turnover or stock, distribution of supplies, drug cost, departmental overhead, administrative costs, operating expense per patient day and the cost of drugs per patient day. A separate stock card should be provided for each item purchased, or manufactured. The card should include definite information including a description or specification of the item, date manufactured or purchased, quantity, source of supply, unit cost, requisition number and/or order number.

In planning, organizing and directing pharmacy policies and procedures in accordance with the established policies of the hospital, the pharmacist should proceed in such a manner as to assure the best pharmacy service to the patient and at the same time to establish an efficient and economical department of the hospital. To accomplish this he must develop work schedules, routines and procedures within the department and also he must work cooperatively with other departments which constantly obtain service for the patient through the pharmacy. In establishing pharmacy policies he will be guided by the advice of the Pharmacy and Therapeutics Committee, by the administrative officer of the hospital, and in certain instances by other specialized departments of the institution.

Maintenance of facilities of the pharmacy include responsibility for assuring orderliness, cleanliness, and sanitary procedures as well as keeping all equipment in good working order.

It is especially advantageous that the pharmacist be assigned to instruct student nurses in pharmacology since, in addition to possessing a basic knowledge of the action and uses of drugs, he has a more particularized acquaintance of the preparations, dosage forms and storage requirements of drugs used in the hospital.

After the Pharmacy and Therapeutics Committee has made its decisions regarding the addition or deletion of drugs approved for use in the hospital, or has passed other recommendations regarding pharmacy policy and such recommendations have received approval, it shall be the responsibility of the pharmacist to carry out the recommendations.

The pharmacist should prepare reports on the progress of the pharmacy department and submit them to the director of the hospital. These reports may be rendered monthly, quarterly or yearly depending upon the requirements of the hospital. Reports should include a summary of the professional and administrative activities of the department for the fiscal period involved.

6. Pharmacy and Therapeutics Committee

There shall be a Pharmacy and Therapeutics Committee, which shall hold at least two regular meetings annually and such additional meetings as may be required. The members of the committee shall be chosen from the several divisions of the medical staff. The pharmacist-in-charge shall be a member of the committee and shall serve as its secretary. He shall keep a transcript of proceedings and shall forward a copy to the proper governing authority of the hospital. The purpose of the committee shall be (*A*) to develop a formulary of accepted drugs for use in the hospital, (*B*) to serve as an advisory group to the hospital pharmacist on matters pertaining to the choice of drugs to be stocked, (*C*) to evaluate clinical data concerning drugs requested for use in the hospital, (*D*) to add to and to delete from the list of drugs accepted for use in the hospital, (*E*) to prevent unnecessary duplication in the stock of the same basic drug and its preparations and (*F*) to make recommendations concerning drugs to be stocked on the nursing units and other services.

ELABORATION ON PHARMACY AND THERAPEUTICS COMMITTEE: Professional policies relating to drugs should emanate from this committee. A sound therapeutic and economical basis for drug policy is the establishment of a hospital formulary. It is an important factor in the efficient operation of the pharmacy in that it guards against duplication. The formulary should be revised at least as often as new editions of the United States Pharmacopeia and National Formulary appear, and interim supplements should be issued as necessary.

The terms of office of the several members of the committee should be staggered. This will prevent the appointment at one time of an entirely new and inexperienced committee.

The committee should meet preferably once a month, but not less than twice annually. Medical staff members should present, in writing, their requests to the committee for action. The committee meetings should precede staff meetings by a sufficient interval of time to allow the secretary to make up reports. Reports of committee meetings and actions taken should be presented by the secretary to the medical staff meetings. These reports should include additions to the formulary, deletions from the formulary, reasons for not including requested items and all other actions taken by the committee.

Therapeutic Trends

edited by WILLIAM JOHNSON

5-Fluorouracil

Results of clinical studies are reported in *Cancer Research 18:*478 (May) 1958 by Curreri, *et al* after using 5-fluorouracil, a drug synthesized by Duschinsky, Pleven, and Heidelberger and supplied by Hoffmann-LaRoche in ampuls containing 50 mg. of 5-FU/ml. in saline. This drug was usually injected intravenously without dilution. On occasion it was given intramuscularly or orally in fruit juice. Objectives of early studies were to determine the toxicity of 5-fluorouracil and to establish a safe schedule of administration. 5-Fluorouracil was used in the treatment of far advanced malignant neoplastic disease. Patients with far advanced neoplasms, not amenable to surgery, x-ray or hormonal therapy, were accepted. The neoplastic spectrum encountered included 85 cases of a variety of solid tumors, ten cases of leukemia, and eight cases of lymphoma—a total of 103 cases. In patients with solid tumors that have responded to repeated courses of 5-fluorouracil therapy, no development of resistance to the drug has been observed. Analgesics were no longer required for the relief of pain in the majority of patients following treatment with 5-fluorouracil. The toxicity effects are of relatively short duration once the drug is withdrawn. A further study is recommended.

WILLARD E. HERSHBERGER

New Adjuvant For Acne Vulgaris

In this clinical study, 252 patients with acne vulgaris of varying degrees were treated with Compound A. The patients, aged 12 to 40, were observed from June 1956 to Dec. 1957. Over-all results showed 65 patients to be very much improved, 136 improved, while 45 patients showed no change, and 6 were worse. The most improvement was obtained in the milder and uncomplicated cases of acne vulgaris as reported by Irving Milberg in *N. Y. State J. Med. 58:*2675 (August 15) 1958. The composition of Compound A is as follows: benzoic acid 3.45%, zinc oxide 1%, zinc stearate 14.25%, boric acid 12.2%, alcohol S. D. #40 20%, and vanishing cream-type base 49.1%. The cream *in vitro* is antiseptic and bactericidal against skin organisms. The residual white powder left on drying is also bacteriostatic. This new antiseptic medicated cream was supplied by Pharma-Craft Corp., Cranbary, N. J.

SYLVIA SCHMIDT

Relaxin For Dysmenorrhea

Three hundred and fifty women divided into 5 groups were given oral relaxin tablets for the treatment of dysmenorrhea. Each group of 70 women was given an increased amount of medication for a series of three doses. Individual group dosages were 4-6-8-10-15 mg. respectively. Results demonstrated that with each succeeding medication, there was a progressive decrease in the number of failures and an increase in those women obtaining partial and/or complete relief. Of those treated, only 9.6% failed to respond favorably with oral medications. Abramson and Reid in *Obst. Gyn. 12:*123 (Aug.) 1958 relate further that the 34 women who received no relief with oral medication, were subsequently given an intramuscular injection of 1 ml. of aqueous relaxin. A total of 44 injections were made. Following 32 of 44 injections, complete relief was noted in from 15 minutes to 1 hour. The remaining 12 obtained relief in 1¼ to 2½ hours, the over-all average being 56.8 minutes. Only one allergic reaction was noted. A new concept of etiology of dysmenorrhea has thus been presented, and it is postulated that functional dysmenorrhea is generally derived from a lack of hormone conditioning of the connective tissue of the cervix by the hormone relaxin. The medication used was prepared by Warner-Chilcott Co. as Releasin through the courtesy of Dr. Kroc.

SYLVIA SCHMIDT

Antihypertensive Effect of S. 9-390

Ten patients with severe hypertension were chosen for this study as described by Rochelle and Ford in *Am. Heart J. 56:*463 (Sept.) 1958. S. 9-390 presents pharmacologic features of a ganglionic blocking agent with some central activity but no evidence of sympatholytic properties. The drug, (2-(o-chlorobenzyl) imidazoline hydrochloride), was found to be quite potent during the initial 2 weeks of therapy, and the blood pressure control was equal to that of combined mecamylamine and rauwolfia therapy. During the subsequent 6 weeks there was a progressive diminution in antihypertension, despite a 4-fold increase in drug dosage, suggesting a resistance development. A moderate augmentation was noted in the last 2 weeks when Diuril was added. The only protracted side effect was drowsiness. The toxicity was minimal, but the development of drug resistance prohibits its wide clinical use in hypertensive states. Subsequent investigation did

show, however, that upon restarting administration of S. 9-390 to former patients tolerant to it, the hypotensive effect was equal to that demonstrated when first used, suggesting a transient resistance. S. 9-390 was supplied by Dr. Sahyun, Ashyun Laboratories, Santa Barbara, Calif.

SYLVIA SCHMIDT

Use of Piromen in Ophthalmology

Piromen is a pyrogenic substance obtained from *Pseudomonas aeruginosa*. This material has been shown to be a relatively nontoxic and nonanaphylactogenic bacterial substance. The intravenous administration of Piromen is characterized by marked mobilization of reticuloendothelial system, by transient leukopenia and eosinopenia followed by neutrophilic leukocytosis, by lymphoid tissue hyperplasia, and by a stimulatory action on the adrenal cortex. The beneficial therapeutic effects of Piromen are probably not due to any particular one of these reactions but rather to a combination of them. The intravenous injection of Piromen is usually followed by a chill in 45 minutes to an hour. A slight headache is also part of the ordinary reaction. Most of these symptoms are easily relieved by acetylsalicylic acid. The initial dose of Piromen for the treatment of eye diseases should be 5 mcg. Some of the eye conditions treated included traumatic iritis, postoperative iridocylitis, nongranulomatous uveitis, central retinitis, and optic neuritis. In a great majority of the cases treated, either a cure was obtained or a marked improvement was noted. It is highly suggested that Piromen is a substance of decided therapeutic value in the treatment of ophthalmic diseases. The study of this drug was reported in AMA *Arch. Ophth. 60:*319 (Aug.) 1958 by Buxedo.

R. H. HARRISON

The Pharmacological Action of Ryanodine on Rhythmically Contracting Mammalian Smooth Muscle

Hillyard and Procita report in *J. Pharmacol. Exp. Therap. 123:*140 (June) 1958, the plant alkaloid, ryanodine, in concentrations extending to 10^{-7}M. produces a progressive increase in the longitudinal muscle tonus of rhythmically active isolated duodenal strips from the rabbit. The rate of onset and the degree of action is dependent on the degree of existing activity in the muscle. Alteration of the environment such as decreasing the ionic calcium strength, increasing the ionic magnesium strength or any changes which will decrease the activity of the muscle, will either reduce or inhibit the rate of onset. The ryanodine-induced contracture of intestinal smooth muscle is irreversible. Temporary antagonism or prevention is possible with agents capable of producing a relaxation of smooth muscle. Removal of the antagonist, however, brings about a prompt return of the contracted state.

R. H. HARRISON

E-39 in the Advanced Malignant Neoplasms

The compound 2,5 dipropyloxy-3,6-diethyleniminobenzoquinone (E-39) was administered to 40 patients intravenously. Many of the patients had advanced ovarian cancer. There was evidence of response in 13 of the 40 patients. The use of E-39 at the dosage in this test is not without certain risks. Depression of the leukocyte and platelet levels with purpura in a few instances and marked gastrointestinal hemorrhage were observed. It appears that E-39 is sometimes effective in causing a temporary restraint in the growth or a temperate regression of certain malignant neoplasms of man. This study was reported by Brunschwig in *Cancer 11:*765 (July-Aug.) 1958.

R. H. HARRISON

The Action Of Propionyl Atropine Methyl Nitrate On Gastric Function

Propionyl atropine methyl nitrate, a quaternary ammonium derivative of atropine, was tested to ascertain its therapeutic use as an aid in relief of distress of peptic ulceration. The drug reduces the volume and acidity of the gastric juice and also decreases the motility of the intestine.

For comparable antisecretory effect atropine has the least side actions. The results obtained by Herman and Shaw show that for equivalent antisecretory effect PAMN has less side effects than atropine. It would be expected that PAMN has less side effects than either propantheline or oxyphenonium. Propionyl atropine methyl nitrate is subject to Austrailan Patent No. 23270/56 and other patents. The results of this study are reported in the *J. Pharm. Pharmacol. 10:*356 (June) 1958.

R. HARRISON

Hinsconstarch In Treatment Of Pulmonary Tuberculosis

Barry *et al* in a preliminary report of a pilot investigation of hinsconstarch (a periodate oxidized potato starch by condensation with equimolar proportions of isoniazid and p-aminobenzal thiosemicarbazone) indicate that it may be effective in the treatment of pulmonary tuberculosis. The investigation which was reported in the *Am. Rev. Tuberc.* 77:952 (June) 1958, established a dosage of 40 to 45 mg. per Kg. body weight given daily provides adequate therapeutic effect without toxicity. Fifty-two patients with pulmonary tuberculosis due to isoniazid susceptible tubercle bacilli were treated with hinsconstarch for a period of from 3 to 12 months. Moderate to marked roentgenographic improvement was observed in 65 percent in 3 months, 80 percent in 6 months, and increasing percentages in lower periods. Closure of all cavities without surgery was achieved in 55 percent of patients during the period of the trial. Disappearance of tubercle bacilli from the sputum occurred in 85 percent of the 52 patients.

R. HARRISON

Timely Drugs

Decadron

GENERIC AND CHEMICAL NAMES: Dexamethasone; 16-alpha-methyl-9-alpha-fluoro derivative of prednisolone.

INDICATIONS: Anti-inflammatory steroid indicated in a variety of allergic and inflammatory diseases such as rheumatoid arthritis, rheumatoid spondylitis, Still's disease, psoriatic arthritis, periarteritis nodosa, bronchial asthma, allergic rhinitis, etc. Is 5 times more potent than triamcinolone or methylprednisolone, 7 times more potent than prednisolone or prednisolone, 28 times more potent than hydrocortisone, and 35 times more potent than cortisone.

SIDE EFFECTS AND CONTRAINDICATIONS: Same as for any other steroid except that it may be the treatment of choice in patients with diabetes because of its virtual freedom from diabetogenic activity.

DOSAGE: Dosage can usually be determined on a tablet for tablet replacement basis, i.e., 0.75 mg. will replace 4 mg. triamcinolone or methylprednisolone, 5 mg. prednisone or prednisolone, 20 mg. hydrocortisone or 25 mg. cortisone.

PREPARATIONS: Tablets of 0.5 mg. and 0.75 mg.

PACKAGING: Bottles of 100 and 1,000 tablets.

SUPPLIER: Merck Sharp & Dohme.

Diabinese

GENERIC AND CHEMICAL NAMES: Chlorpropamide; 1-(p-chlorobenzenesulfonyl)-3-propylurea.

INDICATIONS: Oral hypoglycemic belonging to the arylsulfonylurea group; indicated in uncomplicated diabetes mellitus of the stable, mild, or moderately severe non-ketosis, maturity-onset or adult type.

SIDE EFFECTS AND CONTRAINDICATIONS: Not indicated in patients having juvenile or growth-onset type of diabetes mellitus or unstable or severely "brittle" type of diabetes; contraindicated in patients with hepatic dysfunction and in adult or maturity-onset type complicated by ketosis, acidosis, diabetic coma, fever, severe trauma, gangrene, Raynaud's disease or serious impairment of renal or thyroid function. Side effects are generally transient and non-serious; most serious are severe and prolonged hypoglycemia and, rarely, jaundice.

DOSAGE: In mild or moderately severe middle-aged or slightly older patient, initial therapy is 0.5 Gm. daily; in geriatric diabetic patient, initial dose should be 0.25 Gm. daily. No diabetic patient should be started on more than 0.5 Gm. daily. Maintenance dose is usually determined after 3 to 5 days.

PREPARATIONS: Scored tablets of 0.1 Gm. and 0.25 Gm.

PACKAGING: 0.1 Gm.—bottles of 100 tablets; 0.25 Gm.—bottles of 60 and 250 tablets.

SUPPLIER: Pfizer Laboratories.

Equanil Suspension

GENERIC NAME: Meprobamate.

INDICATIONS: Management of anxiety and tension, in neurological conditions where muscle spasm is a factor, and in nocturnal enuresis; as adjunctive therapy in psychiatric management of musculoskeletal and neuromuscular disorders, and in control and rehabilitation of chronic alcoholics.

DOSAGE: As directed by physician.

PREPARATIONS: Fruit-flavored suspension containing 0.2 Gm. meprobamate per 5 ml.

PACKAGING: Bottles of 4 ounces.

SUPPLIER: Wyeth Laboratories.

Levanil

GENERIC NAME: Ectylurea.

INDICATIONS: Mild, non-habit forming tranquilizer of low toxicity, indicated in the relief of apprehension, tension and anxiety.

DOSAGE: Adults, 150 to 300 mg. 3 or 4 times daily; children, one-half the adult dosage.

PREPARATIONS: Tablets of 100 mg.

PACKAGING: Bottles of 50 tablets.

SUPPLIER: Upjohn Co.

Stelazine

GENERIC AND CHEMICAL NAME: Trifluoperazine; 10-[3-(1-methyl-4-piperazinyl)-propyl]-2-trifluoromethylpheno-thiazine dihydrochloride, SKF 5019.

INDICATIONS: Antipsychotic agent especially useful in chronic and withdrawn schizophrenia.

SIDE EFFECTS AND CONTRAINDICATIONS: Although hypotension has not been a problem, adequate precautions should be taken when the drug is used in patients with impaired cardiovascular systems; physician should be alert for signs of toxic manifestations which have been reported occasionally with some phenothiazine compounds.

DOSAGE: Intended for use only in patients who are either hospitalized or under adequate supervision. Orally, 2 mg. 3 times daily, increasing to 5 mg. 3 times daily or 10 mg. 2 times daily within two or three weeks. Intramuscularly, 1 to 2 mg. every 4 to 6 hours; more than 6 mg. in 24 hours is rarely necessary.

PREPARATIONS: Injection 2 mg. per ml.; tablets of 2 mg., 5 mg., and 10 mg.

PACKAGING: Multiple dose vials of 10 ml. in boxes of 1 and 20 vials; bottles of 50 and 1,500 tablets.

SUPPLIER: Smith, Kline & French Laboratories.

Ultandren

CHEMICAL NAME: Fluoxymesterone; 9*a*-fluoro-11*b*-hydroxy-17Δ-methyltestosterone.

INDICATIONS: In the male, stimulates growth and development of genital organs and secondary sexual structures, and induces a gain in muscle mass and strength; in the female, induces atrophy of vaginal epithelium and uterine endometrium and antagonizes effects of estrogens; in both sexes, creates a positive nitrogen balance leading to improved protein and osseous tissue anabolism. Has up to 5 times the androgenic and anabolic activity of oral methyltestosterone; weight for weight, has greater therapeutic potency than parenterally administered testosterone.

DOSAGE: Depending on condition treated and the individual's response, usual dosage varies from 2 to 10 mg. daily, given singly or in 3 or 4 divided doses.

PREPARATIONS: Tablets of 2 mg. (light green) and 5 mg. (violet), scored.

PACKAGING: Bottles of 40 tablets.

SUPPLIER: Ciba.

Urobiotic

COMPOSITION: Oxytetracycline (Terramycin), glucosamine, sulfamethizole, and phenylazo-diamino-pyridine.

INDICATIONS: For therapy in genito-urinary infections caused by susceptible organisms, including bacterial nephritis, pyelonephritis, pyelitis, ureteritis, cystitis, prostatitis, and urethritis.

SIDE EFFECTS AND CONTRAINDICATIONS: May be contraindicated in patients with chronic glomerulonephritis, hepatitis, hepatic failure, uremia, and obstructive lesions of the urinary tract; should not be used in patients sensitive to any ingredients of the preparation; usual precautions for sulfonamide therapy should be followed; use of broad-spectrum antibiotics may result in overgrowth of nonsusceptible organisms.

DOSAGE: Adults, 1 or 2 capsules 4 times daily; children, proportionately less. Dosage should be continued for at least 7 days.

PREPARATIONS: Capsules containing oxytetracycline 125 mg., glucosamine 125 mg., sulfamethizole 250 mg., and phenylazo-diamino-pyridine 50 mg.

PACKAGING: Bottles of 50 capsules.

SUPPLIER: Pfizer Laboratories.

Temaril Syrup

GENERIC AND CHEMICAL NAMES: Trimeprazine; [dl-10-(3-dimethylamino-2-methylpropyl)-phenothiazine].

INDICATIONS: For treatment of mild and severe pruritus regardless of etiology.

SIDE EFFECTS AND CONTRAINDICATIONS: Usually mild and transient; agranulocytosis seen infrequently with phenothiazine derivatives.

DOSAGE: Adults, 5 mg. at bedtime and 2.5 mg. at breakfast and lunch; children 2 to 12, 2.5 mg. bedtime and, if necessary, 2.5 mg. at one or two meals.

PREPARATIONS: Syrup containing 2.5 mg. per 5 ml.

PACKAGING: Bottles of 120 ml.

SUPPLIER: Smith, Kline & French Laboratories.

A Code For Supervisors

As a supervisor charged with the duty and possessed of the opportunity to lead a group of employees, and supervising the use of equipment, instruments, and material in getting out my department's share of the work, I will sincerely endeavor to guide my thoughts and actions by the following code:

1. I will honestly size up my own capabilities and endeavor to live up to them fully.
2. I will frankly recognize my own limitations and do my utmost to improve my qualifications wherever inadequate.
3. I will try never to underestimate the importance of the other person's point of view, whether he is above or below me in authority.
4. I will remember constantly that the people who work under my supervision are worthy of every consideration and try to deal with them as fellow men.
5. I will be ever mindful that the discovery and development of talent in my men is an important part of my job.
6. I will try to listen more than I talk, keeping in mind that he who listens can always learn.
7. I will maintain an open mind, in the full realization that he who shuts out the ideas of others shuts out more than he shuts in.
8. I will always recognize that I can make more friends by being genuinely interested in other people than I can by trying to get other people interested in me.
9. I will not hamper myself by carrying old grudges or prejudices.
10. I will never hesitate to share my knowledge and experience with my assistants for fear that they may eventually know more than I, because helping them to success will lift me to greater responsibility and opportunity for service.
11. I will not fear to assume the responsibilities of supervision; I will never try to shift blame for errors from myself to my workers.
12. I will not miss the opportunity to give sincere praise and credit where praise and credit are deserved.
13. I will not take myself too seriously, but will realize that blustering, putting on airs, and unnecessary display of authority are but the tactics of the weak.
14. I will maintain friendliness without overfamiliarity.
15. I will deal fairly with a man with a grievance, giving just as much consideration to the man with an "imaginary" grievance as to the man with a grievance that is fully justified.
16. I will treat all my men without partiality or favoritism.
17. I will take a deep concern in the safety, the health, and the general well-being of each of my men.
18. I will never forget that my status as a supervisor obligates me to be a good citizen, to set a good example, and to consider the interests of the men I supervise as well as the interests of the men who supervise me.

—The York, Penna., Foremen's Club

1958 AAAS Annual Meeting

Announcement has been made of the program for the Annual Meeting of the American Association for the Advancement of Science which is to be held at the Hotel Statler in Washington, D.C., during the week of December 28. Hospital pharmacy sessions are scheduled throughout Sunday and Monday, December 28 and 29. The program for the Hospital Pharmacy Section has been coordinated by Mr. Joseph Oddis, the SOCIETY's representative to the AAAS Council-at-Large, working with Dr. George Archambault, Vice-Chairman of the Section.

Papers scheduled are as follows:

Sunday Morning, December 28

9:00 A.M. CONTRIBUTED PAPERS ON HOSPITAL PHARMACY. Arranged by George F. Archambault, D.Sc., Chief, Pharmacy Branch, Division of Hospitals, U.S. Public Health Service, Department of Health, Education, and Welfare, Washington, D.C., and Joseph A. Oddis, Staff Representative, Council on Professional Practice, American Hospital Association, Chicago, Illinois.
Opening Remarks and Announcements, John E. Christian, SECRETARY.

JOSEPH A. ODDIS, PRESIDING

1. GREETINGS—AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, Robert C. Bogash, Director of Pharmacy Department, Lenox Hill Hospital, New York, New York. (3 minutes)

American Pharmaceutical Association, Dr. Robert P. Fischelis, Secretary, American Pharmaceutical Association, Washington, D.C. (3 minutes)

Maryland Association of Hospital Pharmacists, Walter Flayhart, Lutheran Hospital of Maryland, Inc., Baltimore, Maryland. (3 minutes)

District of Columbia Pharmaceutical Association, Morris H. Bortnick, President, Washington, D.C. (3 minutes)

D.C. Branch of the American Pharmaceutical Association, John S. Mitchell, Freedmen's Hospital, Washington, D.C. (3 minutes)

George Washington University, Charles W. Bliven, Dean, School of Pharmacy, The George Washington University, Washington, D.C. (3 minutes)

Howard University, Chauncey I. Cooper, Dean, College of Pharmacy, Howard University, Washington, D.C. (3 minutes)

American Hospital Association, Joseph A. Oddis, Staff Representative, Council on Professional Practice, American Hospital Association, Chicago, Illinois. (3 minutes)

2. REVISED COST STUDIES ON SINGLE DOSE THROW AWAY INJECTABLES. Kenneth R. Nelson, Jr., Office of the Surgeon General, U.S. Public Health Service, Department of Health, Education, and Welfare, Washington, D.C. and Dr. James Hunter, Chief, Medical Officer, and Associate Warden, Medical Center for Federal Prisoners, Springfield, Missouri. (20 minutes)

3. A STUDY OF A FLUID FORM OF MEPROBAMATE. Albert M. White, Assistant Professor of Pharmacy, Albany College of Pharmacy, and Louis P. Jeffrey, Pharmacist-in-Chief, Albany Hospital, Albany, New York. (20 minutes)

4. IMPORTANCE OF THE HOSPITAL PHARMACY IN HOSPITAL ADMINISTRATION. Dr. Charles U. Letourneau, Editorial Director, Hospital Management Journal, Director, Program in Hospital Administration, Northwestern University and Consultant in Hospital Administration, Chicago, Illinois. (20 minutes)

5. THE PREPARATION OF THE PHARMACY BUDGET (DRUGS AND PERSONNEL). Leo Joel, Chief, Financial Management Branch, Division of Hospitals, U.S. Public Health Service, Washington, D.C. (20 minutes)

6. RESEARCH POTENTIAL IN HOSPITAL PHARMACY—PHARMACY STUDENTS ARE NOT AWARE OF IT. Daniel F. Moravec, Pharmacy Editor, Hospital Management Journal, Director of Pharmacy Service, Lincoln General Hospital, Lincoln, Nebraska. (20 minutes)

7. PHYSICAL INCOMPATIBILITIES AND STRIP PACKAGING—EXTENSION OF PREVIOUS REPORTS. Robert C. Bogash. (20 minutes)

8. AMERICAN HOSPITAL FORMULARY SERVICE. Don E. Francke, D. Sc., Chief Pharmacist, University Hospital, Ann Arbor, Michigan. (20 minutes)

Sunday Noon, December 28

12:00 noon. Location to be announced Sunday a.m. Program arranged by E. R. Squibb & Sons, New York, New York. Coordinated by John R. Kenny Jr., Assistant Manager, Trade Distribution.

Annual address of the Vice President and Chairman. George F. Archambault.

Sunday Afternoon, December 28

1:30 p.m. CONTRIBUTED PAPERS ON HOSPITAL PHARMACY AND SYMPOSIUM, HOSPITAL PHARMACIST OF THE FUTURE. Arranged by George F. Archambault, Joseph A. Oddis, and Dr. William F. Apple, Assistant Secretary, American Pharmaceutical Association, Washington, D.C.

GEORGE F. ARCHAMBAULT, PRESIDING

1. STATISTICS—OVERLOOKED TOOL OF RESEARCH? Louis Bromer, Chief, Statistics and Reports Branch, Division of Hospitals, U.S. Public Health Service, Washington, D.C. (20 minutes)

2. RELATIONSHIPS OF BOARDS OF PHARMACY AND HOSPITAL PHARMACIES. Fred T. Mahaffey, Assistant to the Secretary, National Association of Boards of Pharmacy, Chicago, Illinois. (20 minutes)

3. A PHARMACEUTICAL SURVEY OF AN INTERMEDIATE LONG TERM FACILITY. Virgil A. Halbert, Executive Director, Keswick, Baltimore, Maryland. (20 minutes)

4. EXTENDING PHARMACY SERVICE IN THE HEBREW HOME FOR THE AGED. Joel Yellin, Chief Pharmacist, The Hebrew Home for the Aged, Riverdale, Bronx, New York. (20 minutes)

5. THE PHARMACIST'S INCREASED RESPONSIBILITIES FOR PURCHASING UNDER THE FORMULARY SYSTEM. Herbert S. Carlin, Educational and Research Pharmacist, and Herbert L. Flack, Director Pharmacy Service, Jefferson Medical College Hospital, Philadelphia, Pennsylvania (10 minutes)

6. A REVIEW OF REFRIGERATORS FOR PHARMACEUTICALS ON THE NURSING UNIT. Frank A. Fus, Staff Pharmacist, and Herbert L. Flack. (10 minutes)

7. SYMPOSIUM: HOSPITAL PHARMACISTS OF THE FUTURE.

DR. WILLIAM F. APPLE, MODERATOR

A. HOSPITAL ADMINISTRATOR. Dr. Charles U. Letourneau.

B. EDUCATOR. Dr. Charles W. Biven.

C. PHYSICIAN. Dr. Kenneth R. Nelson.

D. PHARMACIST. Mr. Joseph A. Oddis.

Sunday Evening, December 28

6:00 p.m. Program arranged by Mead Johnson & Company, Evansville, Indiana. Coordinated by Edward W. Brady, Trade Relations Director.

7:30 p.m. Program arranged by McKesson & Robbins, Inc., New York, N.Y. Coordinated by Alfred A. Mannino, Sales Manager, Hospital Department.

Monday Afternoon, December 29

1:30 p.m. National Institutes of Health, The Clinical Center, Auditorium, 14th Floor, Bethesda, Maryland.
Symposium, Advance in Conquering Cancer, and Tour Pharmacy Department, The Clinical Center. Arranged by George F. Archambault, Joseph A. Oddis, Dr. Stuart Sessoms, Assistant Director, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; and Milton Skolaut, Chief Pharmacy Department, The Clinical Center, National Institutes of Health, Bethesda, Maryland.

DR. STUART SESSOMS, PRESIDING

1. SYMPOSIUM: ADVANCES IN CONQUERING CANCER

A. INTRODUCTION—Dr. Stuart Sessoms

B. REVIEW OF PROMISING DRUGS. Dr. T. Phillip Waalkes, Special Assistant to the Chief, Cancer Chemotherapy, National Service Center, National Cancer Institute, National Institutes of Health, Bethesda, Maryland.

C. IMPACT ON THE HOSPITAL PHARMACY PROGRAM. Milton Skolaut.

2. FUNCTIONS AND RESPONSIBILITIES OF THE DIVISION OF BIOLOGIC STANDARDS. Dr. Roderick Murray, Director, Division of Biologic Standards, National Institutes of Health, Bethesda, Maryland.

3. Tour Pharmacy Department, The Clinical Center, National Institutes of Health, Bethesda, Maryland.

Monday Evening, December 29

7:00 p.m. Tour American Institute of Pharmacy, Headquarters of the American Pharmaceutical Association, Washington, D.C.

THE LAW of hospital pharmacy

edited by GEORGE F. ARCHAMBAULT

THE TAX-FREE ALCOHOL AND SPIRITUOUS LIQUOR PROBLEMS

► Hospitals are currently confronted with four (4) problem areas involving the use of tax-free alcohol and spirituous liquor:

(1) The use of tax-free alcohol where no charge is made for the medication containing tax-free alcohol but a nominal clinic or outpatient fee is charged;

(2) The legal need for the $50 medicinal spirits tax stamp or the $50 occupational retail liquor dealer tax stamp;

(3) The prepackaging and dispensing of spirituous liquors; and

(4) The use of tax-free alcohol in the Pathology Department of the hospital in instances where the pathologist charges the patient and others for his services.

Hospital pharmacists and hospital administrators have requested background material on these problems. The following is presented to satisfy these requests. It presents the four problems as the writer views them.

Problem 1. The use of tax-free alcohol where no charge is made for the medication containing tax-free alcohol but a nominal clinic or outpatient fee is charged

In April 1937, 21 years ago, the American Hospital Association issued a policy statement on "The Use of Tax-free Alcohol in Clinics" (See *Hospitals,* April 1937). The statement stated in effect that the Bureau of Internal Revenue considered money received from a charity patient by a non-profit clinic, for a medicinal preparation containing tax-free alcohol as a *sale* and, therefore, such use of tax-free alcohol was illegal. The American Hospital Association statement concluded with two recommendations: (1) that hospitals use *tax-paid* alcohol and charge for the outpatient medications under question, *or* (2) that the hospital collect a *clinic fee* that would include the cost of medicinals containing tax-free alcohol.

Eighteen years later, in the spring of 1955, an inquiry was directed to the Director of the Alcohol and Tobacco Tax Division requesting an opinion on the use of tax-free alcohol by hospital pharmacies engaged in filling prescriptions of ambulatory *private* patients of physicians who have offices in hospitals. The Director in reply stated in effect that tax-free alcohol could be used in non-profit hospitals and clinics; that this included the compounding of medications for treatment or use *outside* the clinic, of clinic patients, providing the medications were *not* sold.

This was the same as the opinion of 1937 reflected in the A.H.A. statement of that time. However, the Director of the Alcohol and Tobacco Tax Unit went further in 1955 in discussing the specific question raised, and stated in effect that a *sale* includes not only a specific price paid for a medication *but also* the *nominal clinic admission charge.* A clinic admission charge for such patients is to be considered as constituting a "sale," he stated, even though no specific charge is made for the medication. Therefore, a clinic fee is construed to be a "sale," making it illegal to use tax-free alcohol for this purpose is the conclusion of the Director (See Internal Revenue Ruling 55-664). It should be pointed out that the use of tax-free alcohol on inpatient medications for which a charge is made is not a point at issue.

In March of 1955, the ASHP and the A.H.A. at their Joint Committee meeting took this matter under advisement. As a result the legal counsel of the A.H.A. in Washington has been attempting to effect a change in the present interpretation of "a sale" in the code. They seek a return back to the policy position stated in 1937. To date, this has not been effected.

To recapitulate, the interpretation of the code to 1955 as indicated by the 1937 policy statement of the A.H.A. was to the effect that tax-free alcohol could not be used in medications intended for outpatient use in charitable institutions where a direct charge was made for the medication. The present interpretation of the code goes a step further and considers a nominal clinic fee as including in its elements a charge for the medication and therefore constituting a "sale." This interpretation voids the use of tax-free alcohol in such situations.

Policies adoptable by hospitals seeking compliance with the present regulations are now limited to:

(1) Dispensing medications purchased in processed condition. In other words, in the outpatient area, dispensing purchased Tincture of Belladonna, Elixir Terpin Hydrate, Elixir Terpin

Hydrate with Codeine, Elixir Phenobarbital, and other medicinals involved, if any; or

(2) Bulk compounding of these items with tax-paid alcohol and claim the quarterly drawback; or

(3) Preparing the medications with tax-paid alcohol and absorb the cost; or

(4) Eliminating the clinic fee.

It is hoped that the present interpretation of the law can be modified to its former position in the interest of the nation's health. Such a ruling as now invoked increases unnecessarily the cost of medical care, an item currently of concern to the Federal government and the present Administration. Until such a change is effected, one is reminded that the 1937 A.H.A. Policy Statement on this subject is in violation of the present interpretation of the law.

Problem 2. The legal need for the $50 medicinal spirits tax stamp or the $50 occupational retail liquor dealer tax stamp.

Federal authorities point out that hospitals dispensing spirituous liquors must have a medicinal spirits tax stamp which costs $50 (Section 5122c of the Internal Revenue Code). The purpose of the stamp tax is to control traffic in alcohol. This is not unlike the Federal Narcotic Tax Stamp for which a fee of $3 is paid.

Federal authorities in Washington indicate that the Medicinal Spirits Tax Stamp, while costing $50, the same amount as the Retail Liquor Dealer's special tax stamp, is *not* levied for the same purpose and does not place the hospital pharmacy in the same category as a retail liquor dealer.

Hospital and hospital pharmacy association officials concur in the need for this control but are urging that the fee be a nominal one—$1 or $3 as is the similar Harrison Narcotic Act fee. Hospital authorities point out that should all hospitals purchase this $50 tax stamp, the hospital health bill of the nation would rise another $350,000.

To further complicate this issue, on May 15, 1958, the Assistant Commissioner of the Chicago Federal Regional Office, Alcohol and Tobacco Tax, Internal Revenue Service, issued Industry Memorandum (HI-58-2 "Special Tax Liability by Hospitals for Dispensing Alcoholic Liquor"). This memo states, in effect, that a tax is required of *all* who sell liquor including sales to patients. However, the tax is *not* required if a "condition of sale" is *not* present. A fixed charge or fee for treatment, subsistence, medicine, etc. is considered as "over-all fee" and if unchanged whether or not liquor is dispensed, is deemed *not* a condition of sale. This memo has lead to confusion in hospital circles. The question raised is "Has Washington reversed itself and, because some of the smaller hospitals do not have pharmacists, is the Federal Government now taxing *all* hospitals *as retail liquor dealers (Section 5121) (a) of the Act),* rather than using the Medicinal Spirits Tax Stamp under Provision 5122(c) of the Act? The latter, it will be recalled, is the section used for pharmacies making sales through a duly licensed pharmacist. If the answer to this question is in the affirmative, the local and state tax implications and their affects on increasing the cost of hospital care is a serious one indeed. More will be said on this point later.

Further, inasmuch as no reference is made in the Chicago memo as to "inpatients" and "outpatients," can it be assumed that prescription for a spirituous liquor such as "Whiskey N.F." written by an outpatient physician and dispensed without direct charge to the patient (though a clinic registration fee is charged), is *not* in violation of the Federal act while a similar type prescription for Tincture of Belladonna or Elixir Phenobarbital, etc., is illegal under the 1955 interpretation placed on the use of tax-free alcohol in outpatient charitable hospital activities?

Problem 3. The prepackaging and dispensing of spirituous liquors.

In late 1957, authorities of a leading New York hospital were questioned by a Federal Alcohol Inspector on the prepackaging and dispensing of whiskey. They were informed that, under the law, whiskey could *not* be repackaged as is customarily done for most hospital pharmaceuticals intended for use on nursing station medication units or for individual patients. The point was made that, in repackaging, the new smaller containers do not carry a tax stamp nor do they comply with storage regulations. The particular hospital was requested to write to the Alcohol and Tobacco Tax Unit, admit violation, and agree to cease and desist in this practice. The inspector pointed out that the only legal method of dispensing whiskey was in the original containers with stamps intact. The violations alleged were Section 508, Internal Revenue Code—selling whiskey in bottles without stamps; Section 175.34—use of non-indicia bottles; 3(b)(1) Federal Alcohol Act—failure to have a bottling permit, and Section 240.124—failure to qualify as a bottler.

The law and its regulations are quite clear—prepackaging liquor to individual patient prescription or nursing station unit size while being economically sound in lowering medication costs is prohibited by law. Hospitals under present regulations can use only original bottles, Federal stamp intact, in delivering the medication to the nursing station for individual patient use. The increased cost must of necessity be passed on to the patient. Individual size liquor containers or the smallest bottle size allowed in a particular state (pint, in some instances) appear now to be the most efficient legal method of handling this item.

SELECTED PHARMACEUTICAL ABSTRACTS

and summaries of other articles interesting to hospital pharmacists

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edited by CLIFTON J. LATIOLAIS *and* LEO F. GODLEY

ASCORBIC ACID ASSAY IN COLORED PREPARATIONS

Estimation of Vitamin C in Coloured Preparations, Sarkar, B., Sharma, S. and Ray, G. K., Indian J. Pharm. 20:214 (Aug.) 1958.

Titration methods for assay of vitamin C in colored preparations as recommended by the *British Pharmacopoeia* or *International Pharmacopoeia* are unsuitable because the change in color at the endpoint of titration is masked due to the color already present. Precipitation methods give low results since some of the ascorbic acid is also precipitated.

The authors describe a method for the estimation of vitamin C in colored preparations. This method consists in reducing mercuric chloride to mercurous chloride quantitatively by the vitamin C present in the preparation. The mercurous chloride thus formed is estimated iodometrically.

CLIFTON J. LATIOLAIS

LOW HEAT STERILIZATION, EFFECT OF PRESERVATIVES ON

The Influence of Preservatives on Low Heat Sterilization, Kramer, N., Bull. Paren. Drug Assoc. 12:10 (May-June) 1958.

The reliability of low heat sterilization for heat labile parenteral solutions has been questioned. This has resulted in the addition of more preservatives to these solutions in an attempt to insure absolute sterility. The validity of reliance upon preservatives was investigated by the author, using some of the more common preservatives such as thiomerosal 0.01%, chlorobutanol 0.5%, phenol 0.5%, benzyl alcohol 1.5% methylparasept 0.18%, propylparasept 0.20%, sodium bisulfite 0.2%, and benzalkonium chloride 0.02%.

Buffered solutions of these preservatives ranging from pH 3 to 8 were prepared and autoclaved and then suspensions of *Bacillus sp.* were added to them. One series of tubes was subjected to temperature ranging from 60° to 100° C. for 3 consecutive hours; a second series was subjected to the same temperature range for one hour each day for 3 consecutive days; and a third series was held at room temperature.

Results showed that the preservatives investigated could not be relied upon to enhance the destructive effect of heat, that a low pH is more efficacious than an auxiliary agent in promoting sterilization at lower temperatures and that the factors of heat plus pH really determine sterility. It was also emphasized that the word preservative, in its classical sense, means to inhibit the growth of organisms, not necessarily destroy them.

ROBERT L. RAVIN

ISOTONICITY VALUES, CALCULATING

Isotonic Graphs or Isotonic Tables? A Discussion About the Use of Graph or Table Methods in the Practical Pharmacy, Hammarlund, E. R., Larsen, Johan, and Pedersen-Bjergaard, F., Dansk Tidsskr. Farm. 32:166 (Aug.))1958.

The osmotic activity of a medical solution may be determined from the depression of its freezing point or from the lowering of its vapor pressure. The practical utilization of the results in pharmacy including a discussion of both the graphic and tabular methods is described below.

1. The isotonic graphs in the *Danish Pharmacopoeia* now in force have the freezing point depression as the abscissa and the concentration of solute as the ordinate. The amount of sodium chloride to use for adjustment is read by means of a mirrored sodium chloride curve.

2. Isotonic graphs with the corresponding sodium chloride concentration as the abscissa and the concentration of the substance in question as the ordinate are presented. In this instance the mirrored sodium chloride curve mentioned in paragraph one may be omitted.

3. Individual isotonic graphs with the concentration of the substance as the abscissa and the adjusting amount of sodium chloride as the ordinate are presented.

4. The sodium chloride equivalent method utilizes a sodium chloride equivalent value which is defined as the Gm. of sodium chloride which have the same osmotic value as 1 Gm. of the substance in question. This sodium chloride equivalent is stated for a series of commonly used concentrations.

5. A modification of the table mentioned in paragraph 4 for the same series of commonly used concentrations from which one can read that amount of sodium chloride in Gm. which is contained in 100 ml. of solution of the substance in question at the concentration stated is given.

6. A further modification of the methods mentioned in paragraphs 4 and 5 is one in which the amount of sodium chloride in Gm. which is required to adjust 100 ml. of solution of the substance in question at the concentration stated is given in tabular form.

If the adjusting values are wanted in a substance monograph, graphical proposal 3 is preferred.

If on the other hand, a compact presentation of a long series of substances is wanted, a tabular method is recommended as being the most practical space-saver. While proposal 5 is the easiest to work with if more than one substance must be dissolved, proposal 6 is preferred with solutions of a single substance. Since it is more common for solutions of a single substance to be made isotonic, the conclusion is that proposal 6 is preferred because it directly indicates the amounts of sodium chloride which must be added to solutions of a single substance. The amount of sodium chloride to be added to solutions containing more than one substance is obtained from the following equation:
$(q_1+q_2 \ldots\ldots + qn - (n - 1) \cdot 0.9)$ Gm.

AUTHOR'S SUMMARY

PYROGENS, PHARMACOLOGICAL PROPERTIES OF

Bacterial Pyrogens and Their Pharmacological Properties, Votava, Z., Vajglova, G., and Simek, A., Ceskos. Farm. 7:297 (June) 1958. (Pharmaceutical and Biochemical Research Institute, Prague.)

Pure bacterial pyrogens were prepared from *Eberthella typhi abdominalis, Salmonella typhi murium, Pseudomonas aeruginosa,* and *Salmonella abortus equi.* The major part of balast substances was removed by alcoholic purification without obtaining a significant decrease in the pyrogenic effects. The highest pyrogenic effects were found in the material prepared from *Eberthella typhi abdominalis* and *Salmonella typhi murium.* The reactivity was not lowered on repeated application to rabbits. Pharmacological tests revealed a very low toxicity in mice and practically no influence on the gastrointestinal tract and blood pressure.

AUTHOR'S SUMMARY

POLYVINYL ALCOHOL JELLIES

Polyvinyl Alcohol Jellies, Cox, Peter W. A., Pharm. J. 4:127 (Aug. 16) 1958.

Since the *Extra Pharmacopoeia* formulation for a polyvinyl jelly and plastic film yields unsatisfactory results, such as poor physical appearance and short storage life, the author undertook a series of experimental formulations to improve the products.

Using 5 commercially available grades of polyvinyl alcohol, whose 4 percent solutions had a viscosity range from 5 cps. to 48 cps., various modifications were made until a suitable product was prepared.

The most satisfactory preparation was a transparent, pourable gel which forms a thin plastic film when applied to the skin and has a storage life of more than three months. The formula is as follows: polyvinyl

alcohol (polyviol w 25/140) 10%, chlorhexidine diacetate 0.02%, triethanolamine 3%, industrial methylated spirit (95%) 40%, in distilled water.

ROBERT W. MAHONEY

PERCUTANEOUS ABSORPTION OF DRUGS

Comparative Studies on Percutaneous Absorption, Gemmell, D.H.O., Morrison, J. C., J. Pharm. Pharmacol. 10:553 (Sept.) 1958.

A study was carried out comparing the percutaneous absorption of salicylic acid, sulfanilamide, copper acetylacetonate and copper sulfate through the intact skin of rabbits. Lard, Emulsifying Ointment B.P. and water in the form of a 5 percent carboxymethylcellulose gel were used as the vehicles for the drugs.

Lard proved to be the most efficient base while the 5 percent carboxymethylcellulose in water was the least efficient. Therefore, maximum absorption occurred when the drug was presented to the intact skin in an oil phase. When the absorption of each drug from the same vehicle was compared, it was noted that the differences were quite small. The explanation offered for this was that of the local action that the drugs exert on the intact skin. The differences in absorption from the bases may be explained in terms of their lipid solubilities, if the view is accepted that penetration takes place by way of the appendages and the final barrier to the dermal blood supply is lipoid in nature.

ROBERT L. RAVIN

PYROGEN TEST

Practical Aspects of Pyrogen Tests, Whittet, T. D., Hosp. Pharm. 11:183 (July-Aug.) 1958.

Apyrogenic solutions can be prepared if adequate precautions and techniques are taken and a good, well-baffled still, and pure drugs are available. Ten cases of complaints of pyrogenic reactions to solutions are discussed. Most of the reactions investigated were found to be due to faulty handling technique of the injections on hospital wards. Although the evidence strongly suggested that the injection might have been the cause of the reaction, pyrogen and bacteriological tests have shown it to be satisfactory, with the exception of one incidence.

The survey of the literature reported that the addition of antihistamine drugs to blood may or may not reduce the incidence of pyrogenic reactions in blood transfusions. The results seem to depend upon the antihistamine used. Investigations have shown that ion exchange columns can produce pyrogen-free deionized water, but presently cannot be relied upon for use in injections.

NORMAN HO

PYROGENS, COMPOUNDS CONSTITUTING

Determination of Compounds Constituting Bacterial Pyrogens by Paper Chromatography, Macek, K., Hacaperkova, J., Ceskos. Farm. 7:300 (June) 1958. (Pharmaceutical and Biochemical Research Institute, Prague)

A method was worked out for the determination of small amounts of bacterial pyrogens. The material (10-200 mg.) was hydrolyzed with 2.5 N sulfuric acid and the hydrolyzates subjected to paper chromatography after suitable adjustment. The sugars were proved by chromatography in the system n-butanol-pyridine-water (6:4:3) and detected with a solution of diphenylamine-aniline-phosphoric acid. The identification of glucose, galactose, and mannose was carried out by means of enzymic detection with a yeast suspension. Purines were developed in the system n-butanol saturated with water containing 5% formamide and detected with a solution of sublimate and eosin. Amino acids were developed in the system n-butanol-acetic acid-water (4:1:5) and detected with ninhydrin solution. The composition of sugars was found to be different qualitatively and quantitatively in all pyrogens under test. The pyrogens of *S. typhi murium* contained galactose, glucose, mannose, xylose, rhamnose, and abequose, those of *E. typhi* contained galactose, glucose, mannose, xylose, ribose, rhamnose, and tyvelose. Pyrogens of *P. vulgaris* had galactose, glucose, mannose, xylose, ribose, and rhamnose and those of *S. abortus equi* contained galactose, glucose, mannose, rhamnose, and abequose. The content of balast substances was estimated from the amount of present constituents of nucleic acids, purines and amino acids.

AUTHOR'S SUMMARY

OINTMENTS, ASSAY OF

A Note on the Assay of Certain Ointments in Nonaqueous Solution, Wang, S., Harr, H., and Hoffman, R., Drug Standards 26:116 (July-Aug.) 1958.

A method involving the nonaqueous titration of ammoniated mercury, Benzocaine, and Butesin picrate ointments, which bases were previously dissolved by a mixed solvent (1 part chloroform and 5 parts chlorobenzene) and mixed with glacial acetic acid to form a homogeneous solution before titration, is presented. Standardized perchloric acid was used as the titrating agent and methyl violet as the indicator. This quantitative method can be applied to certain medicaments in many ointment bases, such as petrolatum, polyethylene glycol, and hydrophilic ointment, without going through tedious extraction methods.

NORMAN HO

STERILE PACKAGING, USP PROBLEMS IN

Pharmacopeial Problems in Sterile Packaging, Miller, L. C., Bull. Paren. Drug Assoc. 12:18 (May-June) 1958.

The author explores several areas regarding the sterile packaging of parenteral products that may be considered for pharmacopeial revision. New definitions of both single-dose and multiple-dose containers have been drafted and are now subject to approval. A re-evaluation of the term "hermetic" is also being studied to determine whether diaphragm-sealed containers should be considered hermetic or should the term be restricted to fuse-sealed ampuls. The wider adoption of cartridge containers has also posed various problems for consideration.

Another pressing current problem is a proposal to allow antibacterial agents in small single-dose containers (5 ml. or less). Would the patient generally benefit if such a proposal were accepted? Also, there exists the problem of the proper selection of effective preservatives, should the proposal be accepted.

The U.S.P. considers the closure and the container as one unit and requires that the combination shall be such as not to change the character of the contents. However, on storage, many injections extract material from the closures and therefore no longer comply with the official standards. Therefore, the U.S.P. Committee of Revision is considering all suggestions for testing procedures for determining both the chemical and physical stability of closures. The Committee is also re-evaluating the standards that have been previously used.

ROBERT L. RAVIN

STERILITY TESTING OF NONAQUEOUS PARENTERALS

Preservation and Sterility Testing of Oleaginous Parenterals, Lieberman, M., Newmark, H., Bull. Paren. Drug. Assoc. 12:1 (May-June) 1958.

The authors of this paper and the discussion following its presentation enumerate some of the difficulties entailed in the development of sterility testing procedures for nonaqueous parenteral products. The method used for evolving a testing procedure is described and some of the problems posed are discussed. There is the question of chemical stability *vs.* sterilization heat requirements; the possible entrapment of viable organisms in the oil layer resulting in false negative results; the fact that drug powders are strongly bacteriostatic and make testing difficult in view of the dilutions required. It was the opinion of the authors that sterility tests must be run as a minimum safeguard even though the validity of the results might still be questionable.

The addition of one or more of the commonly used bacteriostatic agents to anhydrous oils proved ineffective for insuring their sterilization, and sterilization was achieved only at 170° C. with an exposure period of one hour.

Organisms very resistant to heat for sterility testing procedures were felt unjustified due to the danger involved by their presence in a laboratory and also because these organisms are not usually found in normal soil or as normal air contaminants.

ROBERT L. RAVIN

PARENTERAL PRODUCTS, APPROACH TO DEVELOPMENT

An Approach to Development of Parenteral Products, Damuskus, C. W., Bull. Parenteral Drug Assoc. 12:3 (Sept.-Oct.) 1958.

Parenteral production is a specialized area of drug development and manufacturing. The problems faced include (a) safety, characterized by the relationship of therapeutic responses and toxic effect, (b) stability, both physical and chemical, and (c) packaging. The discussion of the paper was primarily devoted to the problem of stability of parenteral products with temperature variations.

NORMAN HO

ADJUVANT EFFECT OF WATER-IN-OIL EMULSIONS CONTAINING INFLUENZA VIRUS

A Study of the Factors Associated with the Adjuvant Effect of Water-in-Oil Emulsions Containing Influenza Virus, McKinney, R., Dissertation Abstract, 19:118 (July) 1958.

The evaluation of emulsified vaccines containing influenza virus has shown that an adjuvant type of antibody response is induced most effectively with a water-in-oil type emulsion. The oil used should be mineral oil; emulsions made from animal fats were found ineffective. The initial peak level of antibody produced, whether from emulsified or "standard" vaccines, is dependent upon the respository of the virus *in situ* for 16 days. Mineral oil emulsified vaccines tend to release a large and effective portion of the antigen as early as eight hours after innoculation and the major portion of the antigen by 16 days. The slow continuous release of antigen is important in maintaining high antibody levels for prolonged periods of time. A further investigation suggested that the efficacy of virus vaccine, whether emulsified or in saline solutions, and antibody production are related to an inflammatory cellular response at the site of injection, but more information is deemed necessary to understand this inflammation—antibody production mechanism.

NORMAN HO

FDA INSPECTION, WHAT AND WHY OF

The What and Why of FDA Inspection, Hereford, F. M., Bull. Parenteral Drug Assoc. 12:10 (Oct.) 1958.

The purpose of FDA inspection is to control manufacturing procedures that would otherwise result in a dangerous product being produced. In the preliminary inspection the inspector acquaints himself with the general management and manufacturing practices. The inspection is conducted critically and comprehensively according to the following guides:

1. Handling and storage of raw materials.
2. System of batch records and controls.
3. Manufacturing and identity of batch materials throughout the processes.
4. Laboratory controls.
5. Sterility precautions for parenteral production.
6. Labeling controls.
7. Discussions with management to evaluate the quality and level of various control procedures.

The inspection is not conducted with the idea of being critical of the manufacturer but to discuss with management the apparent deficiencies in the manufacturing operation and make recommendations with the resultant delivery of standardized and potent products.

NORMAN HO

STABLE BASIC ALUMINIUM ACETATE FOR PHARMACEUTICAL PURPOSES

Method of Obtaining Stable Aluminium Acetate for Medicinal Purposes, Pakula R. and Smolenski J., Acta Poloniae Pharmaceutica, (Poland) 15:297 (July-Aug.) 1958.

All pharmacists are aware of the considerable instability of basic aluminium acetate utilized for preparing pharmaceutical preparations such as solutions, ointments, powders, etc. The many steps taken with the aim of increasing the stability of this substance, e.g. the addition of tartaric acid, gelatin, etc. are characterized by several inconveniences. In order to find out a suitable method for preparing stable basic aluminium acetate the authors have undertaken a thorough study in which the following procedure proved to be the best:

Add dry and fine ammonia alum, while stirring, to 12% solution of ammonia in water; the solution formed in this way is to be characterized by the proportion of 5.5 mols NH_4OH to 1 mol alum. After 30 minutes, when the pH of the milieu drops to 7, add 1 mol of ammonium carbonate, as 12% solution, after which the reaction is to be continued at normal temperature during 30 to 60 minutes. Separate then the aluminium hydroxide formed in this way by means of filtering, then wash it with 0.5% solution of ammonium carbonate and then with pure water until all sulfate and ammonium ions are removed. Separate the water from the precipitate by filtration. Then test the solubility of the precipitate in acetic acid and determine by titration the content of Al_2O_3 soluble in acids. Afterwards add the humid precipitate, while stirring, to acetic acid (1 mol Al_2O_3 to 4 mols acetic acid). The concentration of acetic acid is to be chosen in the way that a solution of about 30% basic aluminium acetate results. The solution process is to be carried out at 30 to 35° C. within 2 hours while thoroughly stirring and comminuting coarse particles of $Al(OH)_3$. Determine then by analysis the substances not used up in the reaction. The solution should be absolutely clear. Clarification should be accomplished by means of activated charcoal. Evaporate the resulting clear solution of 30% of basic aluminium acetate by agitating it with aluminum plates heated to 60°C. or by dispersing it thoroughly in a stream of an inert gas. A colorless, glass-like, pseudocrystalline powder results.

HUBERT ZACEK

CURRENT LITERATURE

. . . also calling your attention to the following articles appearing in recent hospital and pharmaceutical journals

. . . . . .

ADMINISTRATION

—Dispensing

Moravec, Daniel F.: Drug Samples, *Hosp. Management* 86:102 (Nov.) 1958.

Schlossberg, Eli: Sixteen Safeguards Against Medication Errors, *Hospitals* 32:62 (Oct.) 1958.

—Purchasing

Carr, James Jr.: Relationship of Administrator and Purchasing Agent, *Hosp. Management* 86:118 (Oct.) 1958.

Hassan, William E. Jr.: Purchase and Inventory Control of Pharmaceuticals, *Hosp. Progress* 39:110 (Oct.) 1958.

EDUCATION AND TEACHING

Allen, F.A.D., Allen, Joan, and Fleming, F. G.: Teaching "Materia Medica" to Nurses, *Public Pharmacist* (Great Britain) 15:227 (Oct.) 1958.

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Archambault, George F.: Responsibilities of State Boards, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 19:612 (Oct.) 1958.

OUTPATIENT CARE

Parker, Paul F.: Hospital Pharmacy and Outpatient Care, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 19:599 (Oct.) 1958.

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Whittet, T. D.: Practical Aspects of Pyrogen Tests, *Public Pharmacist* (Great Britain) 15:232 (Oct.) 1958.

Hopkins, S. J.: The Design and Function of Autoclaves, *Public Pharmacist* (Great Britain) 15:238 (Oct.) 1958.

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Turnbull, J. C.: Public Relations and the Hospital Pharmacist, *The Hospital Pharmacist* (Canada) 11:231 (Sept.-Oct.) 1958.

STANDARDS

Latiolais, Clifton J.: Pharmacy's Status Rises With Its Standards, *Modern Hosp.* 91:104 (Oct.) 1958.

GENERAL

Zugich, John J.: Hospitals at New Crossroad, *Am. Profess. Pharm.* 24:778 (Oct.) 1958.

DRUG EVALUATIONS

by the Council on Drugs of the American Medical Association

► THE FOLLOWING MONOGRAPHS and supplemental statements on drugs have been authorized by the Council on Drugs of the American Medical Association for publication and inclusion in *New and Nonofficial Drugs*. They are based upon the evaluation of available scientific data and reports of investigations. In order to make the material even more valuable, dosage forms and preparations of individual drugs have been added to the monographs. These dosage forms and preparations were not taken from material published in the *Journal of the American Medical Association* by the Council on Drugs; rather, they were obtained from such manufacturers' brochures, news releases, etc., which were available to us at the time of publication. An attempt has been made to make the list of dosage forms as complete as possible. However, no guarantee can be made that the list of preparations is complete and it is suggested that hospital pharmacists consult manufacturers' releases for additional dosage forms and preparations.

The issues of the *Journal of the American Medical Association* from which each monograph has been taken is noted under each monograph. Monographs in this issue of the JOURNAL include those published in the *Journal* to Sept. 21, 1958.

Notice

New and Nonofficial Drugs 1958 is now available from your local bookstore and from the publishers, J. B. Lippincott Company, Philadelphia, Pa. This 1958 edition contains monographs of drugs evaluated by the Council on Drugs of the American Medical Association and published in the Journal of the A.M.A. to January 1, 1958. The index listed below contains those drugs evaluated and published between January 1, 1958 and September 21, 1958.

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Report to the Council

The Council has authorized publication of the following report.

H. D. KAUTZ, M.D. *Secretary*

FACTORS INFLUENCING CLINICAL EVALUATION OF DRUGS

With Special Reference To The Double-Blind Technique

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► THE FALLIBILITY of enthusiastic claims for new drugs makes it desirable to recognize those investigations which are likely to yield substantial data and to lead to interpretations that can be ascribed to pharmacodynamic effects rather than to wish, prejudice, coincidence, accident, or error. Some new drugs, despite statistical validations in reports of their efficacy and safety, do not survive the test of actual use or, even worse, have serious repercussions. The undesirable effects of such drugs employed therapeutically already have achieved alarming proportions, being observed in approximately 5% of 1,000 consecutive recent admissions to a major hospital in the city of New York.[1] This situation may become even worse if the present rate of development of new drugs continues (about 550 new preparations each year or more than one every day[2]) and if the medical profession continues to be misled by poorly conducted or inadequate evaluations of new drugs.

Criteria for distinguishing substantial studies from the unsubstantial must, therefore, be established in order to deal with the enormous number of reports on the large number of entirely new pharmacologically active drugs introduced in the market each year. Many methods for the evaluation of drugs have been designed. Of all the devices to insure valid data, none seems to have attracted so much attention and to have evoked so much controversy as the so-called double-blind technique. So much has been said and written about the technique that it does not need detailed description here. Briefly, it is a control device to prevent bias from influencing results. On the one hand, it rules out the effects of the hopes and anxieties of the patient by giving both the drug under investigation and a placebo of identical appearance in such a way that the subject (the first "blind" man) does not know which he is receiving. On the other hand, it also rules out the influence of preconceived hopes of, and unconscious communication by, the investigator or observer by keeping him (the second "blind" man) ignorant of whether he is prescribing a placebo or an active drug.[3] At the same time, the technique provides another control, a means of comparison with the magnitude of placebo effects.

The device is both philosophically and practically sound. In addition, perhaps because of the widespread attention it has attracted or the magic quality it appears to have, the double-blind technique has been assumed to be a complete

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method of drug evaluation in itself. Indeed, it is often called the double-blind test. Many seem to believe that all that is necessary for a good clinical study is to use it, and, since it is relatively easy to apply, many are exploiting it in just this way. A large number of papers emphasize in the very title that this type of control was used,[4] not only as if the use of a control in a clinical experiment were worthy of special mention, but also as if to warn the reader in advance that a special type of insurance had been taken out to guarantee that the results about to be recounted were beyond reproach.

If it were a fact that merely the use of the double-blind technique guaranteed the reliability of the data and the validity of the conclusions drawn from these data, the answer to the problem of drug evaluation would be simple indeed. But there are, in fact, a large number of studies in which the double-blind technique has been used, wherein the conclusions drawn from the data are open to question. In addition, the conclusions of some investigators are clearly at variance with well-established and universally accepted clinical and pharmacological observations. For example, the conclusions of one study imply that glyceryl trinitrate (nitroglycerin) has no clinical effects distinguishable from those of a placebo in patients with the anginal syndrome.[5]

That the double-blind technique does not rule out incompatible interpretations may be demonstrated by our own experiences in evaluating the analgesic action of aspirin. One of us (W. M.), using the double-blind technique, gave 25 patients with arthralgic pain aspirin in doses of 250 mg., 500 mg., and 1.0 Gm., three times a day. At the end of a two-week period, on each dosage, each patient turned in a report card indicating his own reaction to the medication during the period. This is a fairly common design for clinical evaluations in outpatients.

Statistical analysis of the data indicated that the patients were unable to distinguish between any of the doses of aspirin and the placebo (see table). Had five times as many observations been made, additional data of this sort would not have revealed a significant difference between reactions to aspirin and to the placebo. The results are inconsistent and without significant difference in any category for any treatment. These statistical analyses of the data could have been interpreted to prove that there is, in fact, no difference between the analgesic actions of aspirin and those of a placebo.

The double-blind technique was also applied by one of us (R. W. H.) to a different experimental design to evaluate aspirin, in which a bedside observer recorded the analgesic action as it developed.[6] Unlike the patients in the first study, who kept their own report cards and were seen only at infrequent intervals, the patients in the second study, who communicated immediately with an observer ("blind"), distinguished between the analgesic action of doses of aspirin and placebo and discriminated between graded doses of aspirin (fig. 1 and 2). These results were also highly significant statistically.

Response of Twenty-five Patients to Treatment with Aspirin and Placebo

Condition	Placebo	Aspirin		
		250 Mg.	500 Mg.	1 Gm.
Improvement, %	38	50	38	44
No change, %	38	19	38	31
Worse, %	25	31	25	25

How are we to resolve such discrepant results? No simple device such as the double-blind technique will correct astigmatism or myopia in the examination of drugs. The blind will not lead the blind to a valid conclusion unless the method somehow also provides vision.

It is our contention that the evaluation of the effects of drugs in man is by no means simpler, nor does it permit a less rigorous method of examination, than the formal experiment with the laboratory animal. The methodology has a strict discipline of its own. Clinical evaluations must deal appropriately with a complex of forces which affect patient reaction, or erroneous impressions of the virtues of new drugs will continue to be a source of confusion to the physician, of dangerous or ineffectual therapy for the patient, and of eventual economic loss to the manufacturer.

It is the purpose of this report to examine the factors which determine the sensitivity and the reliability of methods of drug evaluation in man and to consider the position of the double-blind technique in the schema. These factors have been analyzed elsewhere with, perhaps, less emphasis on the relative importance of double-blindness.[7] A variety of terms (response variables, primary stimulus variables, intervening stimulus variables[8]) have been used to describe these factors. To keep from beclouding the issues with yet more and, perhaps, equally unsatisfactory terminology, instead of ascribing terms to these factors, we shall describe them as stated in the following section.

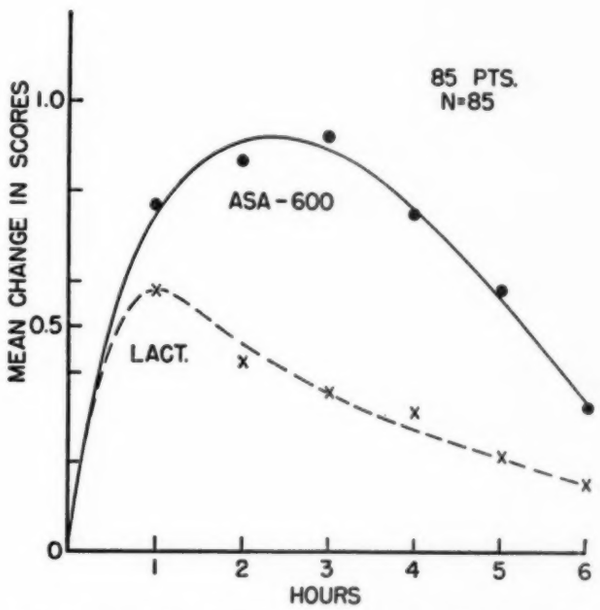

Fig. 1.—Time-effect curves for aspirin and placebo. Plot of mean hourly pain-relief scores, obtained in 85 patients with pain due to cancer, after oral administration of 600 mg. of aspirin and a lactose placebo. In these studies patients reported their pain to an observer in terms of "none," "slight," "moderate," and "severe." These categories were given numerical values, and pain relief was assessed as changes in score after administration of drug as compared with premedication score.

Forces Which Influence Data in Clinical Evaluations

The forces which may influence data in clinical evaluations, especially when subjective responses are involved, may be enumerated as follows: (1) Pharmacodynamic actions; (2) dosage; (3) choice of subject; (4) use of controls; (5) collection of data; (6) sensitivity of the method; (7) placebo actions; (8) bias; and (9) forces extraneous to the experiment.

Pharmacodynamics

Pharmacodynamic Actions.—Pharmacodynamic actions present the least difficulty in their evaluation when objective measurement is feasible. When pharmacodynamic actions are potent, characteristic, and reproducible and are not seriously compromised by psychic forces, evaluation is thus relatively simple. For example, the action of a mercurial diuretic lends itself to precise, dependable, and relatively simple measurement, because it can be expressed in terms of the several pounds of fluid that a patient with congestive heart failure may lose overnight.[9]

Other drug actions, especially those which must be evalu-

ated in terms of subjective response, are far more difficult to assess.[10] The influence of moderately potent analgesic agents on pain is difficult to evaluate, because pain is so susceptible to suggestion.[11] The hypotensive action of drugs is elusive because of the spontaneous tendency to wide variation of blood pressure in patients with hypertension, as well as because of the influence of immediate circumstance, tension, position, and rest on blood pressure.[12] Each drug effect, therefore, requires careful consideration in relation to the method used to measure it.

Dosage

When the dosage is too low, regardless of the pharmacological actions or potency of a drug, clinical evaluation will not reveal a difference between placebo and drug. However, when too large a dose is used, therapeutic value may be obscured by toxic effects. Neither token nor toxic doses are useful in drug evaluations. Dosage must be carefully chosen. A dose should usually be used which, by preliminary experiment, is shown to lie in the sensitive portion of the dosage-response curve of the drug in question, although there are

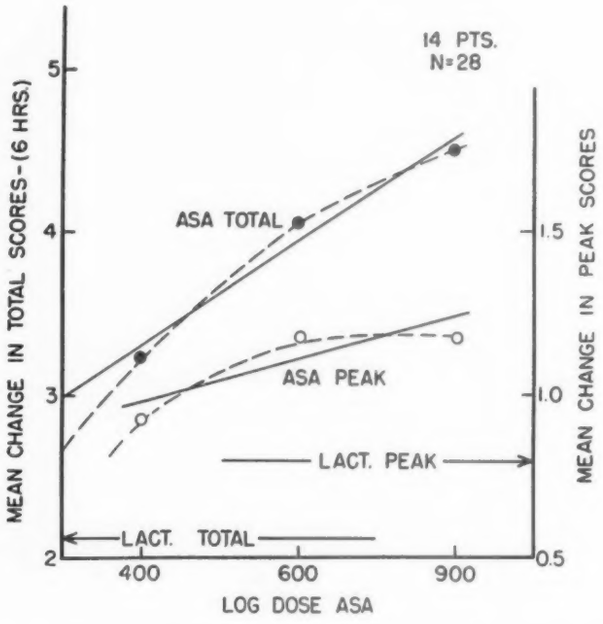

Fig. 2.—Dose-effect curves for aspirin. Mean peak relief scores (*right*) and mean total relief scores for six hours (*left*) are plotted against doses on a log scale. These were doses of 400, 600, and 900 mg. of aspirin and a placebo administered in a random order. Pain relief was assessed as in figure 1.

special situations and designs in which a threshold or a ceiling dose may be more suitable. As a matter of fact, the use of a series of graded doses provides a much more substantial basis for drug evaluation than the use of a single dose, no matter how well chosen, since it also serves as a built-in measure of the sensitivity of the method and the discriminating powers of the study population—an internal control, so to speak.

Subjects

Choice of Subject.—The choice of the appropriate subject is a critical matter in the design of clinical investigations. Just as some species of animals are more suitable than others for particular experiments in the laboratory, so some subjects are more appropriate than others for the clinical investigation of particular actions or effects. The argument that the patient for whom the drug is ultimately intended represents the best subject for the evaluation of a particular drug is a truism with serious limitations. Often he is the only possible subject, but there are also situations in which he may be unsuitable.[13] The choice of the subject, insofar as there may be a choice, depends more on the goals or aims of the investigation than on the disease for which the particular drug may be used if it is found to be active in man. The choice really rests on the purpose of the investigation, whether it is (1) to predict the value of a drug in the treatment of a particular disease, i. e., a therapeutic evaluation, or (2) to define the action of a drug in man, i. e., a pharmacological examination.

That there are two fundamentally different goals in clinical investigation is of obvious importance to those who design the investigations, but the realization of this distinction is of equal importance to those who read and interpret the reports of the investigation. It is too often assumed by readers, and even implied by authors, that the results of one type of investigation invariably apply to the other.

Some amplification may, therefore, be justified. The investigation of pharmacological actions of a drug in man is a necessary preliminary to its therapeutic evaluation. Although the results of the former may have implications of utility in particular disease states which are borne out by subsequent experience, sometimes the therapeutic evaluation fails to confirm the suggestive pharmacological findings. Only the therapeutic evaluation of the drug in the patient with the disease can provide the conclusive data of its value in the disease. The investigation of the therapeutic potential of drugs, therefore, cannot be carried out on any subjects but those with the particular condition for which it is proposed. If the evaluation is to have predictive significance, the group of patients must represent a fair (or random) sample of the patients who suffer from the disease.

The problem in the choice of subjects is a fundamentally different one, however, when the aim of the investigation is to explore or define the pharmacodynamic actions of a drug in man. Here the complex of unknown factors which influence the functional state of man may obscure the phenomena which are to be examined, measured, or evaluated. It is appropriate to avoid, eliminate, or reduce these unknown factors in the pharmacodynamic evaluation, since here the purpose is to define, within practical limits, fairly isolated drug actions. However, since these factors comprise ever-present issues in treatment, they must be accepted in the therapeutic evaluation of drugs.

Thus, while the utility of a diuretic in the treatment of congestive failure can be predicted only after an experience with a representative sample of patients with congestive failure, the effects of diuretics on particular electrolytes or in the influence of electrolyte load on diuretic action can be much better explored in healthy subjects. This is not to say that the healthy or normal subject is always the best for the pharmacological investigation. There are situations, e. g., that of the drug for cardiac arrhythmia, which demand the patient for the pharmacological as well as the therapeutic investigation. There are also situations in which there appears to be a choice, depending largely on the experimental approach, convenience, and availability of subject material. For example, drugs used in motion sickness can be investigated in voyagers with motion sickness aboard ship, and they can be investigated in healthy subjects with vertigo induced by the Barany test. Additional examples will not serve to clarify further the idea that, in the exploration of pharmacodynamic action of drugs in man, there are situations which are highly specific and in which only the patient with the disease for which the drug is intended can be the subject, that there are drugs for which both the patient and the normal man are suitable subjects and for which the choice may be based on convenience alone, and, finally, that there are situations in which the normal man appears to be clearly the more desirable subject than the patient.

The aforementioned considerations determine the type of subject essential for the clinical evaluation. Provided that they do not conflict with these, there are some general considerations which must also be taken into account. Subjects must be selected in a manner which insures the ability of the

group, as a whole, to discriminate between "active" and "inert" agents. If this basic requirement for a useful method of drug evaluation is satisfied, unless there is a special reason for doing otherwise (e. g., the examination of a drug to be used only in infants), the attempt should be made to have the composition of the group as representative as possible of the general population.

To attain this objective, when extremely large numbers do not provide it by chance, some selection may be justified or even essential. Subjects likely to give misleading results should not overwhelm the group. The composition of the group with respect to age and sex should not be unusual. The potentially high side-effect liability of patients with renal disease and of the elderly, in general, must be considered. That dosage response in the very young sometimes differs significantly from that of adults must also be taken into account. Exceedingly phlegmatic subjects render the method less sensitive, just as highly neurotic and highly suggestible patients tend to compromise the sensitivity of the method through wide swings of mood and attitude as well as of placebo reaction (both positive and negative). The number of these subjects, therefore, should not be excessive.[14]

Knowledge of participation in an experiment, in the exploration of a new drug, or in any kind of a special examination places special psychic pressure on the patient and tends to make him act in something other than his usual manner—to be overly introspective, to help the investigator in some cases, and to react with fear in others. Some patients will tolerate discomforts with less difficulty when they know they are participating in an investigation; on the other hand, some may resent it.[15] But, however they react, this kind of information alters the subject and, thereby, adds a distracting influence to patient reaction with which the method of evaluation has to deal.

The acquisition of subjects for studies is an important practical problem, often a serious one. It would appear not only proper, but also legally desirable, to call on volunteers. However, the volunteer may present a problem in clinical evaluations; the highly cooperative and willing volunteer may provide a highly personal set of psychological problems which disturb the study. In an interesting analysis of this problem by Lasagna,[16] it has been shown that the volunteer is by no means representative of the average subject.

Controls

Use of Controls.—No experiment in any discipline can be pursued without controls. As a matter of fact, even those experiments which the experimenters, themselves, presume are without controls are, nevertheless, controlled. The control is a basis of comparison, and, thus, there is a control inherent in every judgment on a drug. The only important question about the control is, therefore, not whether it is present, but whether it is sound as a basis for the comparison on which the judgment is based.

It is tempting to use an easy way out, to use what has been called the historical control,[17] i. e., a recounting of previous or personal experience or recorded experience as a basis of comparison. Often, this is not recognized as a control—and with good reason, for it is a treacherous control. No method of drug examination is more likely to lead to erroneous conclusions, because it has none of the safeguards provided by other controls, the elimination of placebo effects and of bias. It also fails utterly to provide comparable bases for examinations of control and experimental groups. Only in the case of the disease in which an irrevocable or unquestionable characteristic course has been established, and particularly when the disease is rare, is the historical control justified.

The classic experiment uses separate groups for control and treatment, but this provides significant data useful for statistical validation only when the groups are extremely large or extraordinarily homogeneous. In man, this poses a serious practical problem. Since sets of identical twins (the equivalent of litter mates in the laboratory) are too rare to be hoped for, proper and careful matching (often an insuperable task) of control and experimental groups is essential. When the number of subjects is very large and when alternate patients are put in each group, chance alone will insure a proper balance. However, even when large numbers are available, the proper segregation of groups of patients is often a serious and difficult matter.

An alternate method, which is acceptable, is to give each patient the medicaments and the placebo serially, so that each subject serves as his own control. Since here the control and the experimental subject are identical, there is a valid basis for comparison. For such a comparison, the subject must be available for observation for a relatively longer period of time than that required in the first plan. In clinical evaluations, the second plan usually is more satisfactory than the first because smaller numbers are needed; hence, the study can be conducted in less time and with less cost. On the other hand, when the subjects have progressive disease, it may be inappropriate to compare effects at two stages of the disease. If this is the case, only separate control and treated groups are acceptable.

Data

Collection of Data.—When objective measurement is possible and differences can be expected to be large, there is relatively little difficulty in collecting data. However, when the patient must communicate his experience, it is quite another matter. There are few experimental procedures in which so vital a part of an experiment as the collection, storage, and interpretation of observations is left in the hands of an interested, biased, and untrained assistant as that in which the subject himself is asked to report on his experiences after a period of medication. How can he help having his total recollection colored more by recent events than by those farther back in his memory—what happened two days or two weeks ago or even two hours before questioning—when, perhaps, he was annoyed by some action of the receptionist in the clinic.

The daily report-card system was designed to deal with this defect in the interval-report system.[18] When these records are kept by the patient himself, the improvement in methodology is more theoretical than actual. At the very best, it substitutes 24-hour recall for, say, two-week recall, but it still has the same fundamental deficiency. In practice, it is often no better than the longer interval system. We have observed patients fill out their "daily" report cards on their return to the outpatient department after an interval of as much as two weeks, immediately before being asked to turn them in. In any event, while it is obvious that it provides more data, the "daily" report-card system has not been subjected to an analysis which indicates that it also provides better data than the longer interval-report system. Other improvements have been suggested, such as having the subject mail a post card each night or phone a report each night,[19] but each of these compromises still leaves much of the data subject to the caprice of the patient for too long.

In general, any device which leaves the discrimination of reaction to drugs at the mercy of patient recall provides the setting for outside influence and tampering with the data. Every effort should be made to minimize the period between the experience with the drug and the recording of the data; the data should be taken out of the patient's possession as soon as possible and, thereby, kept as nearly as possible in its original form.

Sensitivity

Sensitivity of the Method.—As in methods for chemical analysis, every method of drug evaluation requires a demonstration that its sensitivity is appropriate to the problem. A

scale of sensitivity should indicate, first, the ability of the method to detect the drug action and, second, its capacity to discriminate increments in effects. Without the first, a negative answer cannot be defended, and without the second, a positive answer has no quantitative meaning.

A method of clinical evaluation can defend a negative answer only if it demonstrates at the same time that it appreciates the effects of a standard similar drug. The ability of a method to discriminate increments in effects can be indicated by its capacity for dosage response when a series of doses of the standard or experimental drug is used. Such a scale of sensitivity gives positive results a quantitative meaning.

The internal control just described is not only essential to establish the propriety as well as the sensitivity of the method as such, but it may not be eliminated in further clinical evaluations with the same method (as can be done with impunity in some other disciplines; e. g., methods of chemical analyses can usually be repeated many times without rechecking accuracy and sensitivity). The need for a continuing test of sensitivity comes not from instability of the method but from variations in the population of subjects, which at one time or another may make them more or less able to discriminate between "active" and "inert" agents.

Placebos

Placebo Actions.—The term "placebo" has taken on many implications not within its original meaning. As the word is presently used in clinical evaluations, it includes a large series of visceral, somatic, and psychic responses resulting from the symbolic implications of the physician, his ministrations, and his medicaments.[20] Such actions are inherent in all medicaments, whether they are effective, excessive, hazardous, impotent, inert, unpleasant, inadequate, or inappropriate, as long as the medicament is prescribed by the physician for his patient.[21] To be certain that these are not the only effects due to drugs under examination, it is essential to have a basis of comparison of drug effect with "pure" placebo effect. To provide this, one must also give an inert medicament which is otherwise identical with the drug under examination.

It has been suggested by Gaddum[22] that for philological reasons such an inert medicament be called " dummy" rather than "placebo." But, dummy or placebo, an inert control must be given in all studies to distinguish the difference between the effects of the act of drug administration and the pharmacodynamic effects of the medicament itself. This measure provides the only defense against the criticism that results reported are due to placebo actions.

Bias

The person of the physician and his medications have been shown to be symbolic forces of considerable potency in the relief of symptoms, the so-called placebo action. In addition, the hopes of the patient and the therapist, as well as any bias either may have with respect to treatment or experiment, also influence response to treatment. These must be reckoned with in all clinical evaluations.

The patient may want to get better to the extent that he is inclined to see good effects after administration of any new medicament. On the other hand, he may find compensations in his illness and wish to preserve his complaints and hence be inclined to see negative pharmacodynamic effects. "Toxic" effects from placebo are described in the literature,[23] the so-called negative placebo action.

The physician's knowledge of the nature of the medicament is exceedingly important, for, regardless of how much he tries, if he knows the identity of the medicament, he may well communicate this information to the patient. The importance of this unconscious (or conscious) communication has been proved by a study by Batterman and Grossman,[24] in which no difference between aspirin and placebo was detected by the patient unless the physician knew whether he was giving one or the other.

The standard and well-documented procedure is not only to use both placebo and drug which are identical in appearance but also to keep both physician and patient ignorant of what is in use at the time of questioning, examination, and prescription, i. e., the double-blind technique.[21a] Both placebo and drug not only should look alike but also should be prescribed and administered alike in order to prevent bias of both patient and physician from producing apparent drug actions. To be a real control, the placebo should also closely imitate the test-drug in any incidental effects such as taste, or other action perceivable by the patient or physician, but it should be independent of the action under question in the test.

This device, however, does not eliminate bias as an element in the method; it merely attempts to deal with it by equalizing its effects, so that unequally distributed bias alone will not fashion the apparently decisive evidence. At this point, it seems appropriate to emphasize that the double-blind technique is merely a control device; for that reason, we shall designate it the double-blind control.

Extraneous Forces

Forces Extraneous to the Experiment.—The forces extraneous to the experiment include all external influences which affect the state of the subject's physical, functional, and psychic state—a change in the course of the patient's illness, a happy experience, a family quarrel, a change in the weather, or a turn of world affairs. To some extent, these factors may be reduced by removing the patient to the hospital, where they tend to remain relatively constant, compared with the relatively labile scene in the usual home under the best of circumstances. On the other hand, some patients may find the hospital environment disturbing rather than protective, and for them this change makes matters worse. The decision has to be made on an individual basis.

The tendency of extraneous forces to influence results can also be dealt with by prescribing medicament and placebo by a scheme of random distribution. Once again it may be pointed out that this device, randomization, does not eliminate disturbing external forces, but, by spreading the disturbing forces equally, in this way they favor neither drug nor placebo response.

Significance of the Data

It is usually good practice to plan the collection of data in such a way as to simplify subsequent statistical analysis, for, however the experiment is designed, the data should eventually be subjected to statistical analysis, if the significance of differences that are indicated by the data is to be established.[25] This is not to say that the mere statement of statistical significance insures correctness of interpretation. If the data are inappropriate or improperly collected, despite their statistical significance, their interpretation may be erroneous, as illustrated by the results of the study with aspirin cited previously.

It is well to remember that statistics prove nothing—they are merely a device for establishing the betting odds on the reproducibility of the results by mere chance. Statistical prognostication is always based on the assumption that the data used were worthy of collection; statistical analysis of poor data is tantamount to attempting to make a silk purse out of a sow's ear.

Interpretation of the Data

Of the several factors which enter into the design of a proper clinical evaluation, the current literature has placed overwhelming emphasis on one item, the double-blind technique, and relatively little on the others. Unless all factors are

considered and afforded their proper importance in the design of clinical evaluations, improper and erroneous conclusions will be drawn from data that are supplied by studies which use the double-blind control just as well as from those which do not.

It is convenient to consider the design of a study for clinical evaluation in terms of a balance which is used to weigh the evidence for or against a particular pharmacodynamic or therapeutic effect of a drug as compared with chance occurrence. Which way the balance swings, i. e., whether drug action is favored or not, depends, of course, on the relative weight of the evidence in one or the other pan. Whether the swing is meaningful or misleading depends on whether the weight which swings it is due to a specific action of the drug or to any of a myriad of forces which influence man's behavior and his mental, physical, and visceral activity. When such a model is used, one way to prevent swings of the balance by factors other than the intrinsic pharmacodynamic action of the drug itself is to accept and spread their influence equally on both sides of the balance, thereby causing no disturbance in balance by their weight. This is precisely what is attempted by the control devices of double-blindness and randomization; they merely prevent chance and erroneous swings of the balance.

What is not often taken into account in clinical evaluations is how much weight is necessary to make the balance swing at all, that is, the basic sensitivity of the method. Whatever the original sensitivity, consider what is done with it in the usual design for clinical evaluation. Consider that such a balance is not empty at the outset of the evaluation, merely in balance; on both sides of the balance one places equally placebo action of drugs, bias, and influence of diverse extraneous factors, such as weather, political events, family stresses, and a number of other vagaries of human experience that tend to mold or alter man's functional state and his response to drugs. It is to be emphasized that these are not removed as interferences; they are permitted to remain. They are merely spread equally over both pans of the balance by the process of randomization and by the control of double-blindness. The balance is thereby dead-weighted with a large amount of material which is immaterial to the specific problem at hand. No matter how sensitive originally, such a procedure makes the balance less sensitive, just as an analytic balance, sensitive to a fraction of a milligram under usual conditions, is no longer swung out of balance by milligrams when dead-weighted with several kilograms on each pan (fig. 3).

Ultimately, therefore, the sensitivity of a method of clinical evaluation is a function of the relative weight of the pharmacodynamic force under investigation and the weight of the nonessential interfering forces which are treated by equalizing them; the greater the former with respect to the latter, the more sensitive the method, and, vice versa, when the latter becomes relatively heavier, the method becomes proportionately less sensitive. The extent to which dead-weighting the balance grossly desensitizes the balance can lead to erroneous interpretations in the sense that the balance indicates no differences whenever it is used to weigh what it is no longer competent to detect.

Of the factors already discussed, some are subject to choice, such as the proper dosage range, the most sensitive subjects, and the appropriate control. Other factors may be modified. The removal of the patient from the home to a constant environment in the hospital may reduce the extraneous variables. The collection of data on the spot, rather than placing it in the hands of the subject himself (a procedure no investigator would ever dream of in any discipline other than psychiatry), reduces the treachery of patient recall. Finally, there remain some irreducible disturbances which can be neither removed nor modified, that is, bias, placebo actions, and the residual extraneous forces. For these there remain the double-blind control and the process of randomization to spread the prejudicial factors equally, so that none of them swings the balance in either direction.

We feel that in the studies with aspirin, which we cited briefly here, the reason for the discrepancy of results by the two methods used is to be found in their relative sensitivity. One method was insensitive because too many interfering forces were dealt with by the procedure of acceptance and balancing out to prevent prejudice of results, whereas the second was sufficiently sensitive because it had removed interference to a practical degree.

A great danger in interpreting clinical evaluations lies in failure to recognize the meaninglessness of the negative answer when the method is not sufficiently sensitive for the purpose. The failure to demonstrate statistically significant differences between drugs or treatments is frequently misinterpreted to mean that no real differences exist. However reasonable the latter may seem from the data, an assertion that the effects of the drug or treatment are identical cannot be proved. No statistical method is capable of, or designed to provide, such a prediction. If differences are noted in the data, statistical tests of significance can merely indicate the probability of their being due to chance. Thus, when the differences are statistically significant, one is assured that this is unlikely a chance occurrence, and one may then, with a measurable degree of confidence, rightly or wrongly (for the statistics themselves do not validate the basic data) ascribe the results to essential differences in the effects of the drugs. However, when the differences are statistically insignificant, a high probability of their being due to chance does not rule out the possibility that they may be real or even important. Such an occurrence could simply result from an inadequate trial or from an insensitive method of evaluation which statistical analysis may not indicate. Only when the design provides built-in controls, showing an ability to discriminate meaningful effects or to show graded effects of graded doses of the drugs, can any valid inferences be drawn from negative results (i. e., statistically insignificant differences).[26]

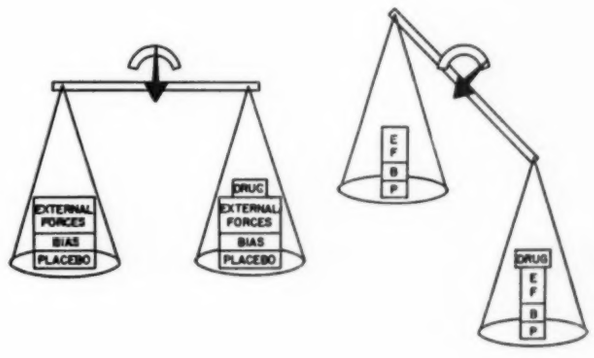

Fig. 3.—Diagrammatic representation of experimental designs for clinical evaluation. *Left*, excessive dead-weighting to prevent chance occurrence from swinging the balance reduces sensitivity to extent that drug effects do not swing balance and, hence, cannot be measured; *right*, reduced dead-weighting through appropriate design makes it possible to measure pharmacodynamic effects of same intensity with same balance.

The question arises whether the double-blind control must invariably be used in clinical evaluations. This has been reviewed by Gold.[21a] Much as we favor use of the device, occasionally it does not seem feasible. There are instances in which the drug promptly reveals itself by its unmistakable effect and automatically removes one or both blindfolds. How could one use the double-blind control in a study comparing a general anesthetic and a placebo? Page and Corcoran[27] point out that, although the physician may remain "blind," with many hypotensive drugs the patient's "blindness" soon vanishes because the drugs have obvious pharmacodynamic effects. Despite such difficulties, there are sometimes devices for circumventing them.

Conclusions

It is our categorical stand that, in addition to the use of the placebo control, the double-blind control should also be used whenever and wherever it is feasible. We conceive of no disadvantage in the application of the double-blind control—only protection against spurious data. It does not handicap design or reduce sensitivity, but it must be used to deal only with bias and psychic factors which cannot be eliminated. We also emphasize as strongly as possible that its use will not validate otherwise poorly designed experiments. When employed in a poorly designed experiment, it may prevent a false-positive interpretation, but it may also lead to a false-negative interpretation.

Each clinical evaluation must be sensitive enough to detect what it proposes to examine, and each experimental design must have built into it an indicator that it is capable of such detection. A negative conclusion is without merit unless a demonstration is incorporated in the clinical evaluation that the method is competent to indicate a positive effect when it is present, i. e., an internal control. It is suggested that in clinical evaluations another demonstrably effective drug always be used in addition to the placebo control to indicate this essential competence of the method.

Beyond this, there is the problem of the sensitivity of the method, the increments in effect which it can distinguish. Few clinical evaluations, indeed, indicate what differences in effect they can discriminate. Yet in all other disciplines of evaluation, it is standard procedure to provide such a scale. Clinical evaluations cannot escape this requirement; the complete method of clinical evaluation must incorporate such a built-in sensitivity scale through the use of graded doses, a demonstration of the increments in pharmacodynamic effect which the method can distinguish. When differences between standard and unknown or placebo are indicated, the sensitivity of the method to distinguish differences is thereby at hand, to indicate the quantitative significance of the differences.

Finally, we should like to state that the proof and establishment of the effects of many drugs, the proof of the superiority of one drug over another, require a plan which is based not only on the principles laid down here but which is also designed with due regard to the particular drug, the particular subject, and the particular circumstance under which the experiment must be conducted. There is as yet no standard method—there are only basic requisites, essential controls, and some well-established procedures—but each different pharmacodynamic action of a drug may need a different subject, a different control, a different circumstance, or a different design for its proper evaluation.

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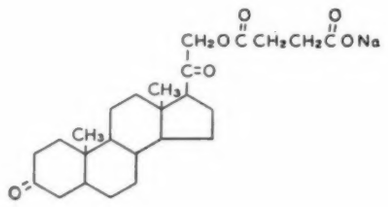
Hydroxydione Sodium Succinate — Viadril®

HYDROXYDIONE SODIUM SUCCINATE is sodium 21-hydroxypregnane-3,20-dione succinate.—The structural formula of hydroxydione sodium succinate may be represented as follows:



Actions and Uses

Hydroxydione sodium succinate is a steriod compound, but its actions in no way resemble those of the adrenal or sex steroid hormones. Hydroxydione produces a nonselective central nervous system depression leading to hypnosis and general anesthesia. The drug induces changes in the electroencephalogram similar to those seen with thiopental, but its onset of action is much slower than with thiopental. Little is known about its mechanism of action, metabolic fate, or excretion.

Hydroxydione sodium succinate is used intravenously as a basal anesthetic or for the induction of general anesthesia prior to maintenance with nitrous oxide-oxygen or other gaseous anesthetic agents. It is not sufficiently potent for use as the sole anesthetic, even for minor procedures involving little trauma. Induction with hydroxydione is characterized as smooth but slow, at least in comparison with the ultra-short-acting thiobarbiturates. For most patients, consciousness is not lost until three to five minutes after the last of the drug has been infused. Since relatively large amounts of the diluted drug solution must be used, induction generally requires up to 20 minutes. This delay in outward signs of drug action makes it difficult to judge accurately the dose needed. Recovery from anesthesia is usually complete within two to three hours. Because of its slow onset and prolonged duration of action, hydroxydione is not as satisfactory as thiopental and related thiobarbiturates for emergency use or for short operative procedures. The drug exerts an amnesic effect; little postoperative depression or nausea and vomiting are observed after recovery from anesthesia.

Hydroxydione sodium succinate provides little, if any, analgesia and does not affect glandular secretions. Hence, it should be used in conjunction with antisecretory, sedative, and/or analgesic premedication. The drug appears to depress laryngeal and pharyngeal reflexes so that laryngospasm is rarely a problem. It does not suppress the cough reflex. For this reason, patients may buck or cough if an endotracheal tube is passed without prior application of a topical anesthetic. Since muscle relaxation with hydroxydione is only moderate, the drug cannot be depended upon to provide relaxation by itself. The usual anesthetic doses of hydroxydione produce little respiratory depression, although apnea can occasionally occur; tachypnea, with rates of 30 to 40 per minute, is observed in some patients. Hypotension, especially reduction in pulse pressure, attending the use of hydroxydione may also be observed, particularly when the rate of intravenous flow is too fast or when excessively concentrated solutions are used. This is usually slow in onset, with maximum depression in blood pressure generally occurring 10 to 20 minutes after induction is completed. The hypotension occasionally may be sufficiently severe to require the administration of vasopressor agents. The drug has, apparently, no tendency to produce cardiac irregularities.

Hydroxydione sodium succinate has a decided venous irritating effect, which constitutes a drawback to its clinical use. Pain at the site of injection is frequently observed, occasionally followed by chemical thrombophlebitis. The irritating effect is more pronounced with concentrated solutions. As with any intravenously administered solution, repeated injections into the same vein apparently enhance the likelihood of venous irritation. Extreme care should be taken to insure against accidental extravasation of the drug into the tissues. The veins of the lower extremities and the small veins of the hand and wrist should not be used for intravenous injection.

Since the classical signs of anesthesia are obscured by administration of hydroxydione, it is necessary to rely on the reflex activity of the patient to determine the depth of anesthesia. The drug is contraindicated in patients with hypotension or tachycardia. It should be administered only by anesthesiologists well trained in the physiology and pharmacology of the respiratory and circulatory systems.

Hydroxydione is a new drug and may represent the pioneer agent in a new chemical class of intravenously given anesthetics. However, much more clinical experience is necessary before its ultimate place in the armamentarium of anesthesiology can be determined.

Dosage

Hydroxydione sodium succinate is administered by intravenous injection only, preferably via the antecubital veins. The solution for injection should be freshly prepared from the dry powder to make a solution no more concentrated than 1% (10 mg. per cubic centimeter). The calculated dose is then injected at a rate of 250 mg. (25 cc. of a 1% solution) per minute into the tubing of a rapidly running intravenous solution (isotonic sodium chloride solution or 5% dextrose in water for injection).

The total initial dose varies from 500 mg. to 1.5 Gm. (50 to 150 cc. of a 1% solution), depending on the weight of the patient, his level of apprehension, and the contemplated duration of the surgical procedure. As a guide to total dosage in adults, 500 mg. will produce an effect for about 30 minutes; thus, for a one-hour procedure, a dose of 1 Gm. of hydroxydione is used. Dosage should be reduced somewhat for geriatric patients. For children between 6 and 12 years of age, the initial dose should not exceed 500 mg. (50 cc. of a 1% solution). General use in children under 6 years is not considered advisable at this time.

Preparations: powder (injection) 500 mg.
Applicable commercial name: Viadril.
Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc., cooperated by furnishing scientific data to aid in the evaluation of hydroxydione sodium succinate.

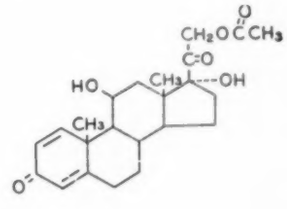
J. Am. Med. Assoc. 168:285 (Sept. 20), 1958

Preparations

Injection Hydroxydione Sodium Succinate (Viadril) 0.5 Gm. vials.

Hydroxyprogesterone Acetate — Prodox® Acetate

HYDROXYPROGESTERONE ACETATE is 17α-hydroxyprogesterone acetate.—The structural formula of hydroxyprogesterone acetate may be represented as follows:



Actions and Uses

Hydroxyprogesterone acetate is an esterified derivative of of hydroxyprogesterone. In contrast to progesterone, which is virtually inactive by the oral route, hydroxyprogesterone acetate causes pronounced progestational effects after oral administration. Typical effects include production of secretory changes in an estrogen-primed endometrium, luteal changes in exfoliated vaginal epithelial cells, suppression of the forma-

tion of fern-like patterns in the cervical mucus (arborization), increases in basal body temperature, and induction of endometrial withdrawal bleeding after endogenous or exogenous estrogenic stimulation. On the basis of both laboratory and clinical studies, hydroxyprogesterone acetate appears to be considerably more potent as a progestogen than are equal amounts of orally given ethisterone. Its onset and duration of action are approximately the same as with parenterally administered progesterone; withdrawal bleeding from an estrogen-primed endometrium generally occurs within two to three days after the oral administration of about 100 mg. The drug produces only minimal estrogenic responses and shows no androgenic activity.

Hydroxyprogesterone acetate is useful in all conditions in which parenterally administered progesterone or hydroxyprogesterone caproate is indicated. (See the monograph on hydroxyprogesterone caproate in New and Nonofficial Drugs.) Thus, it may be given for the treatment of primary or secondary amenorrhea, for functional uterine bleeding in patients with diagnosed benign endometrial hyperplasia, and in cases of infertility believed to be due to inadequate corpus luteum function. The drug may also be employed during the first and second trimesters in patients with a history of habitual abortion. There is inadequate evidence at hand to justify the routine employment of hydroxyprogesterone acetate, or any other progestogen, for the treatment of dysmenorrhea or premenstrual tension.

Hydroxyprogesterone acetate appears to be well tolerated. In the clinical studies to date, no significant untoward effects have been reported.

Dosage

Hydroxyprogesterone acetate is administered orally. For amenorrhea, functional uterine bleeding, and infertility, the usual dosage ranges from 25 to 50 mg. per day. This amount is taken either for 5 successive days beginning on the 21st day of the menstrual cycle or for 20 successive days beginning on the 5th day of the menstrual cycle. Supplemental estrogen therapy may also be instituted in patients who fail to produce adequate amounts of endogenous estrogen. The proposed dosage for habitual abortion is 200 to 400 mg. daily until fetal viability is evident.

Preparations: tablets 25 mg. and 50 mg.
Applicable commercial name: Prodox.
The Upjohn Company cooperated by furnishing scientific data to aid in the evaluation of hydroxyprogesterone acetate.
*J. Am. Med. Assoc. 168:*181 (Sept. 13) 1958.

Preparations

Tablets Hydroxyprogesterone (Prodox) Acetate 25 mg. and 50 mg.

Influenza Virus Vaccine, Monovalent, Type A (Asian Strain)

Influenza Virus Vaccine, Monovalent, Type A (Asian Strain) is a sterile suspension of formaldehyde-killed influenza virus, type A, Asian strain, recovered from the extraembryonic fluids of chick embryos infected with this virus. The product complies with the requirements of the National Institutes of Health of the United States Public Health Service. Influenza virus vaccine, Asian strain, monovalent, has been standardized to date in terms of chicken-cell agglutination (CCA) titer. Most lots of vaccine released by the NIH prior to Dec. 1, 1957, contained 200 CCA units per cubic centimeter, but all lots after that date will contain 400 CCA units per cubic centimeter.

Actions and Uses

Influenza virus vaccine, monovalent, is designed solely for prophylaxis against epidemic and endemic infections caused by the type A, Asian strain, of influenza virus. A rise in hemagglutination-inhibition antibody titers against Asian strain influenza virus has been demonstrated after injection of the vaccine into both man and animals. In man, the rise is apparent within one week after subcutaneous injection, and maximal antibody titers appear to be achieved by the end of the second week. Some recent evidence indicates that the more potent vaccine containing 400 CCA units may elicit antibody responses comparable to those observed in patients who have recovered from Asian influenza. Hemagglutination-inhibition antibody titers produced by vaccines containing other strains of influenza virus have been found to be correlated with the development of immunity against the disease caused by those strains. As yet, clinical experience with the new Asian strain is not sufficient to permit such a correlation. In a single small series of patients, unvaccinated and vaccinated adult volunteers were inoculated with live Asian strain influenza virus; 78% of the unvaccinated placebo group became ill with influenza, whereas 44% of the vaccinated group developed symptoms of this disease. These preliminary results give some indication that the vaccine provides moderate, but incomplete, protection against Asian influenza. At the present time, therefore, it can only be assumed that the present vaccine may be similar to other influenza virus vaccines which have given variable protection, up to 70% in some instances. The period of protection provided by the new vaccine is unknown but, on the basis of experience with other influenza vaccines, can be expected to last for about one year. No significant effect on Asian influenza antibody response, either adverse or beneficial, has been demonstrated when the Asian strain component is administered in combination with the old polyvalent A,A′, and B vaccine.

Since the virus for the vaccine is grown in the extraembryonic fluid of chicken eggs, administration of vaccine is absolutely contraindicated in persons with a history of hypersensitivity to egg, chicken, or chicken feathers. Local reactions to the vaccine are common and include a transient stinging sensation at the site of injection immediately after administration, usually with local redness, induration, and tenderness during the succeeding 12 to 24 hours. A systemic type of reaction characterized by fever, malaise, backache, and headache occurs in an appreciable proportion of patients to whom the vaccine is given subcutaneously; the incidence is considerably lower if the vaccine is administered intracutaneously. Such systemic reactions are usually not serious and rarely incapacitate the patient for longer than one day.

Dosage

Influenza virus vaccine, monovalent, type A (Asian strain) is administered subcutaneously. The dose by this route is 1cc. for adults and 0.5 cc. for children between the ages of 5 and 12 years. For children between the ages of 3 months and 5 years, the American Academy of Pediatrics has suggested a dose of 0.1 cc. given subcutaneously or intracutaneously. The academy has also suggested that the foregoing doses for infants or children be repeated within one or two weeks.

Vaccination of adults by two intracutaneous injections of 0.1 cc. separated by an interval of three to four weeks has been suggested. There is some evidence to indicate that the antibody response after the intracutaneous injection of 0.1 cc. is appreciable, but not as good as that which follows subcutaneous injection of 1 cc. Such a regimen reduces the amount of vaccine needed and, no doubt, is attended by a reduced incidence of systemic reactions. However, it is difficult to predict its clinical efficacy since, in the past, all other field evaluations of influenza vaccines have been carried out with the drug administered by the subcutaneous route.

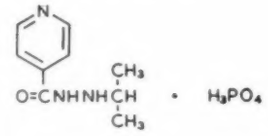
Preparations: suspension (injection) 5 cc. and 10 cc.
Applicable commercial name: Influenza Virus Vaccine, Monovalent, Type A (Asian Strain).
Eli Lilly and Company; The National Drug Company; and Pitman-Moore Company, Division of Allied Laboratories, Inc., cooperated by furnishing scientific data to aid in the evaluation of influenza virus vaccine, monovalent, type A (Asian strain).
*J. Am. Med. Assoc. 168:*182 (Sept. 13) 1958.

Preparations

Influenza Virus Vaccine, Monovalent, Type A (Asian Strain) 5 ml. and 10 ml. vials.

Iproniazid Phosphate — Marsilid® Phosphate

IPRONIAZID PHOSPHATE is 1-isonicotinoyl-2-isopropylhydrazine phosphate.—The structural formula of iproniazid phosphate may be represented as follows:



Actions and Uses

Iproniazid is the isopropyl derivative of isoniazid and, like isoniazid, has tuberculostatic activity. It has been used for the chemotherapy of tuberculosis, particularly in infections of the bones and joints. Because of various side-effects, notably toxic psychoses and manifestations of central nervous system stimulation, the use of the drug as a tuberculostatic agent is now generally discouraged. At the present time, the main therapeutic interest in iproniazid stems from its ability to change (usually in the direction of improvement) the mood and behavior of patients with some types of mental depression.

Iproniazid may be characterized pharmacologically as a central nervous system stimulant of the psychomotor type, although its actions differ in a number of respects from those of the amphetamines. The drug is a potent and irreversible inhibitor of monoamine oxidase, an enzyme involved in the metabolism of epinephrine, levarterenol (norepinephrine), serotonin, and other physiologically active amines. Increases in the concentration of these amines can be demonstrated in the brains of experimental animals after administration of large doses of the drug. The clinical significance of these observations is uncertain, and, at present, the precise mechanism of action of iproniazid is unknown. The drug potentiates other centrally acting drugs, both depressants and stimulants, presumably by interfering with their metabolism in the liver. Although it has a slow onset of action, iproniazid is a cumulative drug with a prolonged effect. Its metabolic fate is not completely understood; however, the isonicotinic acid moiety of the administered drug is known to be excreted in the urine.

The principal therapeutic indication for iproniazid is in the treatment of psychotic patients with moderate to severe depressions. Even though all patients do not respond favorably, current evidence suggests that the drug may improve behavioral patterns without inducing artificial euphoria in some cases. Reported salutary effects include a feeling of well-being and increased vitality, decrease in psychomotor retardation, enhanced ability and/or desire to communicate, and, in some severely withdrawn patients, a return to useful functions. Schizophrenic patients, including those with catatonia, have been reported as not benefited by iproniazid; symptoms may, in fact, be intensified if the drug is administered during the acute phases of the disease. The drug has been of little value in depressed patients with organic brain syndrome. There is some evidence that younger patients seem to respond better than those in the older age group. In general, therapy with iproniazid is best reserved for those depressed patients who have not responded to milder central nervous system stimulants such as amphetamine or methylphenidate. Most authorities also advocate an adequate trial of electroshock therapy before initiating iproniazid medication. It should be borne in mind that, since the response to iproniazid is slow, therapy should be continued at least two months before being considered unsuccessful. Because of its toxicity, iproniazid should not be employed for the treatment of mild, psychoneurotic depressive states.

Increase in appetite and consequent weight gain have been observed in many psychiatric patients during therapy with iproniazid, presumably the result of improved mental status rather than an inherent property of the drug. Although these effects may be desirable in emaciated, debilitated, or chronically ill patients, there is no justification for the employment of iproniazid in underweight, but otherwise normal, patients solely as an aid to weight gain.

Iproniazid produces a wide variety of side-effects and untoward reactions, some of which are serious. The physician using this drug should carefully weigh the advantages to be gained against the risks involved. If the indications for therapy are not clear, the drug should not be given. Although iproniazid has been called a "psychic energizer," this term carries with it unsound and potentially dangerous psychological implications from the standpoint of self-medication. The definite incidence of untoward mental symptoms produced by the drug places it in a different category than caffeine or amphetamine. The wise physician will therefore refrain from indiscriminate prescription use of the drug.

Among the more frequent side-effects to iproniazid are unwanted psychological reactions, ranging in severity from minor inappropriateness in behavior, hyperactivity, and exaggerated dreams to personality changes which may be frankly psychotic. These effects seem to be reversible when the drug is withdrawn. The drug also produces a number of side-effects referable to autonomic disturbance. Among these (not necessarily in order of frequency) are postural hypotension, constipation, dryness of the mouth, diaphoresis, blurring of vision, urinary hesitation, impotence, and palpitation. Postural hypotension, in particular, may be sufficiently frequent and troublesome to require reduction of dosage or cessation of therapy. Administration of pressor amines is apparently of little value in overcoming this orthostatic type of hypotension. Neurological side-effects may also complicate therapy with iproniazid. These include hyperreflexia, clonus and tremors, paresthesias, peripheral neuropathy, vertigo, dizziness, syncope, and muscular weakness. Miscellaneous side-effects to the drug include peripheral edema (chiefly of the ankles and thighs), gastric upsets, anorexia, dyspnea, and abdominal pain. Mild hypochromic anemia sometimes occurs early in the course of therapy with iproniazid. Although this has been self-limiting, the physician using the drug should perform periodic peripheral blood cell counts, keeping in mind the possible subsequent appearance of more serious hematological effects.

The most serious toxic effect referable to therapy with iproniazid is the development of jaundice. The exact incidence of this complication is unknown although it is probably quite low. Nevertheless, the appearance of jaundice must be regarded as an ominous sign, since this may be followed by fulminating hepatitis which can be fatal. In fatal cases, the hepatitis has been sudden in onset with a rapidly downhill course. Postmortem examination of the liver in several of these patients has revealed pathological changes indistinguishable from acute viral hepatitis. It follows, therefore, that iproniazid is absolutely contraindicated in patients with either a history or the presence of jaundice, liver disease, or impaired hepatic function. Periodic liver-function tests are mandatory during therapy with this drug.

Iproniazid should not be given to patients who are overactive, overstimulated, or agitated. It is probably contraindicated in epileptic patients. The drug should be used cautiously and in low doses in patients with impaired kidney function in order to prevent accumulation. Because iproniazid potentiates the action of certain other drugs, particularly alcohol, ether, barbiturates, meperidine, cocaine, procaine, and phenylephrine, it should be used with great caution whenever these drugs are employed. The relatively high incidence of postural hypotension, with the attending danger of fractures and lacerations from falls, makes the use of the drug particularly hazardous in geriatric patients.

Dosage

Iproniazid phosphate is administered orally. As with other potent drugs, dosage should be adjusted to the individual patient. Since the drug has a cumulative action, the lowest effective dose should be employed at all times. Symptoms attributable to withdrawal of iproniazid have been reported to occur within 48 hours after cessation of therapy which has been continued for several weeks. These symptoms include

headache, exaggerated dreams, vertigo, nervousness, hyperreflexia, irritability, insomnia, and depression. For this reason, the drug should be withdrawn gradually unless other manifestations of toxicity demand sudden cessation of therapy.

The initial dose for nontuberculous conditions should not exceed 1 mg. per kilogram of body weight a day, given as a single dose. Dosage should then be reduced rapidly to lower maintenance levels of 0.2 to 0.5 mg. per kilogram of body weight daily or every other day until discontinuance of therapy becomes feasible.

Preparations: tablets 10, 25, and 50 mg.
Applicable commercial name: Marsilid Phosphate.
Hoffmann-LaRoche, Inc., cooperated by furnishing scientific data to aid in the evaluation of iproniazid phosphate.
*J. Am. Med. Assoc. 168:*286 **(Sept. 20) 1958.**

Preparations

Tablets Iproniazid (Marsilid) Phosphate 10 mg., 25 mg., and 50 mg.

Poliomyelitis Immune Globulin (Human)

Use for Oral Herpetiform Lesions

The Council has evaluated the use of poliomyelitis immune globulin (human) for the management of recurrent vesicular lesions of the mouth. Because this preparation of gamma globulin has been useful for the attenuation or prevention of such virus diseases as poliomyelitis, measles, and infectious hepatitis, it has been tried also for the treatment of certain oral lesions believed to be viral in origin. These lesions are collectively designated as oral herpetiform lesions, since the etiology of all types has not been proved to be herpes simplex. This designation includes herpetic gingivostomatitis, herpetic ulcers, herpes labialis (cold sore, fever blister), and aphthous stomatitis (canker sore, aphthous ulcer).

The clinical evaluation of poliomyelitis immune globulin (human) used for this purpose is based upon a few individual case reports taken from a relatively small number of patients to whom the drug was administered for short periods of time. In some cases, therapy was begun after the original lesions had undergone considerable secondary infection, thus complicating the diagnosis and interpretation of results of therapy. Although controlled data are lacking, some physicians and dentists believe that some, but not all, patients are benefited by such therapy; other investigators have been unable to demonstrate beneficial effects. The drug does not appear to have any appreciable effect on lesions already present. In favorable cases, it seems to halt the formation of new lesions. The duration of immunity thus produced is unknown. The results obtained thus far warrant further study under well-controlled conditions. At the present time, however, the use of poliomyelitis immune globulin (human) for the treatment of oral herpetiform lesions is considered experimental.

In the clinical trials to date, dosage appears to be determined on an empirical basis. Equally satisfactory results have been reported with doses ranging from 2.5 cc. every three or four days to as much as 20 cc. every day for six weeks in cases of Behcet's syndrome. As a general rule, it is suggested that 3 to 10 cc. be injected intramuscularly once or twice a week. Subsequent dosage and intervals between injections should be governed by individual response. Further studies are needed, however, to establish both the effect of poliomyelitis immune globulin (human) and its optimal dosage.

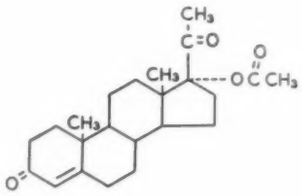
The Council voted to expand New and Nonofficial Drugs to describe the use of poliomyelitis immune globulin (human) for oral herpetiform lesions.

Merck Sharp & Dohme Research Laboratories, Division of Merck & Co., Inc., cooperated by furnishing scientific data to aid in the evaluation of this additional use of poliomyelitis immune globulin (human).
*J. Am. Med. Assoc. 168:*183 **(Sept. 13) 1958.**

Prednisolone Acetate

Sterane® Acetate

PREDNISOLONE ACETATE is prednisolone-21-acetate.—The structural formula of prednisolone acetate may be represented as follows:



Actions and Uses

Prednisolone acetate has the same actions, uses, and limitations as prednisolone. The acetate ester is relatively nonirritating to the tissues and is therefore suitable for intramuscular injection. It may be used in those situations in which oral therapy with prednisolone is not feasible. The drug is also a suitable substitute for orally administered prednisolone in patients undergoing surgery who require maintenance glucocorticoid therapy. (See the monograph on prednisolone in New and Nonofficial Drugs.)

Dosage

Prednisolone acetate is administered by the intramuscular route. Dosage is expressed in terms of the parent drug and is the same as for orally administered prednisolone.

Preparations: suspension (injection, aqueous) 125 mg. in 5 cc.
Applicable commercial name: Sterane.
Pfizer Laboratories, Division of Chas. Pfizer & Company, Inc., cooperated by furnishing scientific data to aid in the evaluation of prednisolone acetate.
*J. Am. Med. Assoc. 168:*183 **(Sept. 13) 1958.**

Preparations

Injection Prednisolone (Sterane) Acetate 25 mg. per ml.; 5 ml. vials.

Ristocetin

Spontin®

Ristocetin is an antibiotic produced by the fermentation of Nocardia lurida, a species of Actinomycetes. The antibiotic has two components, ristocetin A and ristocetin B, the chemistry of which is not completely known. The commercial product is a lyophilized preparation representing a mixture of ristocetins A and B.

Actions and Uses

Ristocetin is an antibiotic substance active against pathogenic gram-positive cocci. It is active in vitro against the following organisms (listed in order of decreasing susceptibility): streptococci, enterococci, pneumococci, and staphylococci. It also shows in vitro activity against mycobacteria, although it is not recommended for use in human tuberculosis infections at the present time, since clinical evidence of its efficacy is lacking.

The principal therapeutic tests of the efficacy of ristocetin have been in the treatment of severe staphylococcic and enterococcic infections. Since the drug is not as active, as a rule, as penicillin and certain other antibiotics, and since it must be given intravenously, it is neither rational nor practical to employ ristocetin for treating staphylococcic infections unless certain criteria have been met. Accurate bacteriological identification of staphylococci should be made prior to initiating therapy. Sensitivity tests should be done to establish not only the sensitivity of the bacteria to ristocetin but also their resistance to such other agents as penicillin, the tetracyclines, streptomycin, erythromycin, chloramphenicol, and perhaps novobiocin and oleandomycin. In some patients treated for severe staphylococcic infections, ristocetin has been successful in arresting infections due to strains of the organism that

have resisted therapy with all other available agents. Thus, the drug shows promise as a valuable antistaphylococcic agent which may be lifesaving in cases in which organismal resistance precludes the use of other antibiotics.

Ristocetin is also of value for the treatment of enterococcic infections, particularly endocarditis caused by that organism. In view of the marked sensitivity of enterococci to the drug and the frequency with which these organisms are resistant to other antibiotics, ristocetin may ultimately prove to be a drug of choice for the initial therapy of serious infections due to enterococci resistant to other antimicrobial agents.

Because ristocetin inhibits, in vitro, the growth of pneumococci and beta-hemolytic streptococci (group A), it has been proposed for use in infections caused by these organisms. Limited experience with such infections indicates that the drug is capable of effecting a cure. Since, however, other antibiotic agents (chiefly penicillin and the tetracyclines) are generally better tolerated, are easier to administer, and are effective, and since bacterial resistance to the other agents rarely, if ever, develops, there is practically no justification for the use of ristocetin in pneumococcic or beta-hemolytic streptococcic (group A) infections.

To date, bacterial (principally staphylococcic) resistance to ristocetin apparently has not developed in vitro or in vivo to the same degree as with certain other antibiotics. It is not yet known whether resistant forms will appear as the clinical use of the drug becomes more extensive. Cross resistance to other antibiotics has not been reported.

Ristocetin produces a number of side-effects, some of which may prove to be serious. Significant depression in white blood cell counts, with relative neutropenia, has been reported in about 4% of cases studied to date. Abnormal bone marrow changes or granulocytopenia have not yet been observed, but physicians should be alert to their possible occurrence. Peripheral blood cell counts, including a differential leukocyte count, should be done at frequent intervals and therapy discontinued immediately if the total white blood cell count falls below 5,000 per cubic millimeter or the differential neutrophil count falls below 50%. In some patients who subsequently develop leukopenia, eosinophilia is observed as an early sign.

Ristocetin is irritating to the intima of veins, and chemical thrombophlebitis can be produced if the drug is administered in too high a concentration. Hence, only diluted solutions are suitable for intravenous infusion, and care should be taken to avoid accidental extravasation after displacement of the infusion needle. Drug fever, sometimes accompanied by a skin eruption, has been observed in a few patients after several days of therapy with ristocetin. This has subsided promptly upon discontinuation of medication. Diarrhea may occur occasionally in patients receiving high doses. The drug can also elicit occasional allergic responses, generally skin rashes either at the site of infusion or, more commonly, a generalized eruption. No anaphylactic reactions have been reported. Although the drug has not been reported to cause toxic effects on the kidneys, periodic urinalyses are considered advisable.

Dosage

Ristocetin should be administered only by the intravenous route, because it is inadequately absorbed when given orally and because it is irritating to the tissues when given extravascularly. The drug is best administered by the drip technique. For this purpose, dry, sterile powder is dissolved in a sufficient amount of 5% dextrose solution to make a 0.2% solution (2 mg. per cubic centimeter). The required volume of this diluted solution is then administered by the intravenous route over a period of 35 to 45 minutes. Occasionally, more concentrated solutions have been given by direct intravenous injection. The maximum tolerated concentration of such solutions is 1.25% (12.5 mg. per cubic centimeter), and the maximum rate of injection is 2 cc. (25 mg.) per minute.

For staphylococcic infections, the usual total daily dose is 25 to 50 mg. per kilogram of body weight. In endocarditis due to resistant strains of staphylococci, or when vegetations or abscesses are present, dosages as high as 75 mg. per kilogram may be used. This is equivalent to 6 Gm. per day for an adult weighing 75 kg. (165 lb.) and is considered the maximum dosage. For acute or subacute endocarditis due to enterococci, the usual dose is 25 mg. per kilogram of body weight. However, doses as high as 50 mg. per kilogram are occasionally employed, depending on clinical response, tolerance, and severity of the infection.

The foregoing total daily doses are given in two or three divided doses at intervals of 8 or 12 hours. The lower dosages indicated suffice for the majority of infections in which ristocetin may be used. It is emphasized that dosages in excess of 2 to 3 Gm. per day are very rarely required. At this dosage level, side-effects are relatively uncommon. If there is no response within 10 to 12 days, indications for the use of ristocetin should be critically reviewed. Since staphylococcic sepsis tends to recur promptly unless almost all staphylococci are eliminated, treatment should be continued for several days after a definite clinical response has been obtained.

Since ristocetin leaves the body mainly in the urine, a cumulative effect may be produced in the elderly (over age 65) or in younger patients with impaired renal function. In these patients, the recommended dosage should usually be reduced, and approximately half the normal dosage will usually bring about a good clinical response.

Preparations: powder (injection) 500 mg.
Applicable commercial name: Spontin.
Abbott Laboratories cooperated by furnishing scientific data to aid in the evaluation of ristocetin.

J. Am. Med. Assoc. 168:183 (Sept. 13) 1958.

Preparations

Injection Ristocetin (Spontin) 0.5 Gm. vials.

Chemical Laboratory — Monographs and Tests

The Chemical Laboratory has authorized publication of the following statement.

WALTER WOLMAN, PH.D., *Director.*

Monographs of tests and assays for new and nonofficial drugs adopted by the Chemical Laboratory of the American Medical Association represent an expression of opinion as to what might constitute adequate tests and assays to serve as a reference guide to those interested in the identity and quality of a new and nonofficial drug.

Completed monographs are published in the journal *Drug Standards* for those interested in the details of the procedures. Monographs on the following drugs have appeared in the March-April, 1958, issue of that journal, except for the monograph on fludrocortisone acetate which appeared in the January-February, 1958, issue. The cooperation of the listed pharmaceutical firms that furnished samples and data is acknowledged.

Acetazolamide (Lederle Laboratories)
Acetazolamide sodium (Lederle Laboratories)
Carbazochrome salicylate (The S. E. Massengill Co.)
Fludrocortisone acetate (Merck Sharp & Dohme)
(E. R. Squibb & Sons)
(The Upjohn Company)
Hydroxystilbamidine isethionate (The Wm. S. Merrell Co.)
Mecamylamine hydrochloride (Merck Sharp & Dohme)
Methyprylon (Hoffmann-La Roche, Inc.)

J. Am. Med. Assoc. 168:41 (Sept. 6) 1958.

POSITIONS

in hospital pharmacy

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The Personnel Placement Service is operated without charge for the benefit of hospitals and pharmacist members of the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. The ultimate purpose is the improvement of pharmaceutical services in hospitals, by more adequately fulfilling hospital pharmacy personnel needs and by locating positions which provide challenging opportunities for pharmacists who have indicated an interest in a hospital career.

By participating in the service, the hospital indicates a desire to achieve a pharmaceutical service which meets the Minimum Standard for Pharmacies in Hospitals. A description of the position should be submitted to the Division of Hospital Pharmacy on the forms provided. The hospital will receive applications directly from the applicant. The hospital agrees to reply to each application received and to notify the Division of Hospital Pharmacy when the position is filled.

The pharmacist, by participating, agrees to submit a Personnel Placement Service Information Form to the Division of Hospital Pharmacy. The applicant will then be notified of openings listed with the Service as they become available and can negotiate directly with the hospital if he is interested. It is agreed that the Division of Hospital Pharmacy will be notified as soon as a position is accepted.

A listing of positions open and wanted will be made regularly in the AMERICAN JOURNAL OF HOSPITAL PHARMACY without charge. Neither the name of the hospital offering the position nor the name of the applicant will be listed, except by code. All inquiries should be directed as shown below, including the code number.

Address all inquiries to
Division of Hospital Pharmacy
2215 Constitution Avenue, N. W.
Washington 7, D.C.

positions open

CHIEF PHARMACIST—350 bed hospital. Must be eligible for licensure in N.J.; interest in manufacturing; 44 hour week, 2 weeks' vacation, salary $5,200 - $5,700. PO-6.

STAFF PHARMACIST—550 bed general hospital located in Ohio. 40 hour week; 2 weeks' vacation. Salary $400-$450. PO-34.

ASST. CHIEF PHARMACIST—310 bed general hospital located in Va.; 40 hour week; 2 weeks' vacation; 3 weeks' sick leave; 6 holidays. Salary $5,000 to $6,000. Also, STAFF PHARMACIST—259 bed hospital located in Va. Hospital experience preferred; 40 hour week; 2 weeks' vacation. Salary open. PO-35.

STAFF PHARMACIST—Large teaching hospital located in N.C. 42 hours per week; 4 weeks' vacation; $450 per month; one meal per day. PO-38.

ASST. CHIEF PHARMACIST—Large voluntary hospital located in Brooklyn; N.Y. registration required. Supervisory ability needed. 35 hour week; 2 weeks' vacation; 10 days' sick leave; 9 holidays. PO-51

CHIEF PHARMACIST—88 bed hospital located in Pa. Planning expansion to 125 beds for general patients and 40 beds for chronic patients. Possibility for pharmacist to serve as Asst. Administrator in charge of purchasing, Central Supply, and Store Room; 40 hour week; 2-4 weeks' vacation. Young man preferred. Salary open. PO-59.

STAFF PHARMACIST—325 bed research hospital. Min. 2 years' experience preferably in hospital pharmacy. N.Y. registration required. Manufacturing sterile solutions and assisting in product development. Salary $4,770 - $5,860 plus benefits. Research work beyond 40 hour week available at $3.00 per hour. PO-61.

ASST. CHIEF PHARMACIST—350 bed general hospital located in Ill. Liberal benefits; 40 hour week; 3 weeks' vacation; air-conditioned pharmacy; salary $450 per month. PO-62

ASST. CHIEF PHARMACIST—100 bed general hospital. Ind. registration required. Young lady preferred. Hospital experience not necessary. Main area of responsibility in Central Supply and Solution Manufacturing. 40 hour week, 3 weeks' vacation PO-63.

PHARMACIST—Animal Hospital. Duties include maintaining drug stock and checkout service, also willing to help students. 44 hour week, 4 weeks' vacation. Salary $5,000. PO-64.

CHIEF PHARMACIST—75 bed general hospital. Full responsibility for pharmacy and other hospital administrative duties. 40 hour week, 2 weeks' vacation. PO-66.

CHIEF PHARMACIST—325 bed general hospital. Eligible for registration N.Y. Hospital experience desirable but not necessary. 40 hour week, 2 weeks' vacation. Salary depending on qualifications. PO-70.

CHIEF PHARMACIST—60 bed hospital. Hospital pharmacy experience required. Duties include Director of Pharmacy, Central Supply, purchasing agent for Medical and Surgical Supplies. 40 hour week, 2 weeks' vacation. Salary $500. NOTE: Hospital scheduled to open February 1, 1959. PO-72

ASST. CHIEF PHARMACIST—313 bed general hospital. Eligible Ky. registration. Previous hospital experience not necessary. 40 hour week, 2 weeks' vacation. Salary $400-$500, benefits. PO-73.

CHIEF PHARMACIST—265 bed general hospital. Varied duties including teaching if interested. No experience required. 40 hour week, 2 weeks' vacation. Salary $400 (approx.) plus benefits. PO-74.

STAFF PHARMACIST—335 bed hospital located in Fla. Duties include responsibilities in outpatient department and parenteral solution room. 40-44 hour week, 2 weeks' vacation, 1 meal daily. Salary $5500. PO-75

CHIEF PHARMACIST—110 bed hospital; will also include 365 bed hospital to be opened in May or June, 1959. 44 hour week, 2 weeks' vacation. Salary to be negotiated. PO-76

ASST. CHIEF PHARMACIST—237 bed general hospital in West Va. Female desired. 44 hour week; 2 weeks' vacation. PO-77

STAFF PHARMACIST—503 bed general hospital. Inpatient and outpatient prescriptions; manufacture of some injectibles. Male or female. Interested in recent graduate with hospital experience desirable but not required. 40-hour week; 2 weeks' vacation; other benefits. PO-78

STAFF PHARMACIST—500 bed general hospital. Prefer female. Eligible for Ohio registration. 40-hour week; 2 weeks' vacation; other benefits; salary approx. $440. PO-79

CHIEF PHARMACIST—320 bed general hospital located in Iowa. Experience or internship in Hospital Pharmacy required. 40-44 hour week, 2 weeks' vacation, other benefits. Salary open. PO-80

STAFF PHARMACIST—316 bed general hospital. Eligible registration in Minnesota. Some manufacturing. 40-hour week; 2 weeks' vacation; other benefits. Salary open. PO-81

STAFF PHARMACIST—360 bed teaching hospital. N.C. registration required. 42 hour week. PO-82

MANUFACTURING PHARMACY SUPERVISOR—To supervise manufacturing department of large teaching hospital pharmacy; excellent facilities and equipment; must have experience in manufacturing pharmacy and be eligible for registration in Illinois. PO-83

ISOTOPE PHARMACIST—To assume responsibility for dispensing of radiopharmaceuticals in large teaching and research hospital; will also include work on research projects as part of a team; will train; manufacturing experience desirable and eligibility for registration in Illinois. PO-84

ASST. PHARMACIST—340 bed general hospital. Registration in N.C. required. Includes assuming administrative duties during absence of Chief Pharmacist. 44-hour week, 3 weeks' vacation; other benefits. Salary $5000-$6000 depending upon experience. PO-85

STAFF PHARMACIST—294 bed hospital expanding to 500 in future. Eligible for registration in Mich. Experience in Hospital Pharmacy and manufacturing preferred. 40-hour week, 2 weeks' vacation. Salary $5720. PO-86

ASST. CHIEF PHARMACIST—256 bed general hospital located in Ind. 40-hour week, 3 weeks' vacation; other benefits. Salary open. PO-87

CHIEF PHARMACIST—450 bed general hospital expanding to 565 beds; to assume complete charge of professional and administrative responsibilities in the Pharmacy Department. Male, with hospital training and/or experience, eligible for licensure in La. Forty hour week; 3 weeks' vacation; salary up to $10,000 per year, depending upon experience and qualifications. PO-88

ASST. CHIEF PHARMACIST—325 bed hospital; 40 hour week; 4 weeks' vacation; salary $5,000. Must be eligible for registration in Pa. PO-89

STAFF PHARMACIST—400 bed hospital located in Tex. Must have B.S. degree and applicants who have served hospital pharmacy internship preferred. Starting salary up to $6000; 40-hour week, 2 weeks' vacation. PO-90

CHIEF PHARMACIST—355 bed general hospital with large outpatient department. Pharmacy will have two registered pharmacists and two or more nonprofessional assistants. 40-hour week plus ½ day alternate Saturdays. Meals free while on duty, 100% personal hospitalization, 25% discount on hospitalization for immediate family. 2 weeks' vacation, 12 days' sick leave, discount on drugs, pension plan. Now upgrading entire hospital program, which will include a well planned hospital pharmacy program and teach. Starting salary $6800-$7,000. PO-91

positions wanted

CHIEF PHARMACIST—(or Asst. Pharmacist at large hospital); prefer vicinity of St. Louis; now employed as staff pharmacist at hospital; registered in Mo. PW-13

PHARMACIST—N. J. registration; prefers Pa., Fla., D.C., or Va., experience in managing retail pharmacy. PW-18

CHIEF PHARMACIST IN A TEACHING HOSPITAL—Registered Ind., Mich., and Mo.; prefers general hospital in Midwest; experience in teaching and in hospital pharmacy. PW-26

PHARMACIST—Registered in Ohio since 1934; also registered in Vt. desires to locate in Vt. Experience in retail pharmacy only. PW-27

PHARMACIST—Prefers vicinity of Chicago; registered in Ill., now employed there. Graduate of Univ. of Ill. College of Phar. PW-31.

CHIEF PHARMACIST OR ASST. PHARMACIST—Prefers medium size hospital; registered in Ind., Mich., and Wis. 8 years' experience chief pharmacist and purchasing agent. Prefers Midwest or East. PW-32.

CHIEF PHARMACIST—Male, married; B.S., working on M.S. 4 years' experience hospital pharmacy. Registered Pa. PW-42.

PHARMACIST—Male, married; B.S. four years retail experience Army Dispensary. Registered N. Y. desires to locate in East. PW-44.

CHIEF PHARMACIST—M.S. degree in hospital pharmacy; prefers East; male, single; extensive experience, including pharmacy and administrative officer in Air Force. PW-62.

CHIEF PHARMACIST—Registered in Tenn., La., Tex.; prefers South; graduate Univ. of Tenn., School of Pharmacy. PW-64.

PHARMACIST—Desires position Baltimore area; prefers small hospital; experience includes 21 years as owner-manager of retail store. PW-65.

INDIAN PHARMACIST—Desires appointment to obtain higher training in hospital pharmacy; graduate Madras Univ.; 1½ years' experience in 1,000 bed hospital, including inpatient and outpatient dispensing, parenteral and general manufacturing and administration. PW-68.

STAFF PHARMACIST—Female, married; internship at Freedman's Hospital; experience in hospital pharmacy. B.S. prefers D.C. area. Registered in Ind., D.C. and N. C. PW-72.

CHIEF PHARMACIST—Female, single; hospital experience. Desires position 100 bed hospital. B.S. Registered Ky. Prefers Ky. PW-73.

HAITIAN STAFF PHARMACIST—Male, married. Has 5 years' hospital experience. Present owner of pharmacy. Desires to locate in northwest U.S. PW-74.

STAFF PHARMACIST—4 years' hospital pharmacy experience; prefers Wash. state (registered). Female, married. B.S. pharmacy. PW-87.

IRANIAN PHARMACIST—Desires opportunity to continue hospital pharmacy studies; single, age 30; excellent academic background; now studying industrial chemistry. Prefers location in west or northwest. PW-88.

ASST. CHIEF PHARMACIST—Female, single; B.S. 1 year hospital pharmacy internship; registered Okla. Prefers west or southwest. PW-89.

ASST. PHARMACIST—Female, married. Educated and trained in Philippines. Served hospital internship. Registered Manila. Desires to locate east coast of U.S. PW-91.

CHIEF PHARMACIST—Prefers large hospital. Male, married; registered N.H., Mass., Calif. 10 years' VA hospital experience. PW-92.

CHIEF PHARMACIST—Prefers small hospital in Ohio. Male, married; B.S.; registered Ohio. Excellent academic and professional background. PW-93.

STAFF PHARMACIST OR ASST. CHIEF—Female, single. Filipino, educated and trained Philippines. 10 years' hospital experience. Served hospital pharmacy internship. PW-95.

ASST. PHARMACIST—Male, married. Registered Tenn. and La. Retail pharmacy experience only. Desires to locate in south. PW-100.

PHARMACIST—Male, married. Registered Ill. Desires to locate in New England. PW-102.

CHIEF PHARMACIST—Male, married. Registered N.J., and Pa. Retail and hospital pharmacy experience. PW-103.

STAFF PHARMACIST—Single female, registered Mo. B.S.; hospital pharmacy experience. Desires locate midwest. PW-104.

PHARMACIST—Filipino, female. B.S. pharmacy, Univ. of Philippines. Desires locate Washington, D.C. PW-107.

STAFF PHARMACIST—Male, single. Registered Del. Served hospital pharmacy internship. Presently employed as Staff Pharmacist. Prefer east. PW-109.

STAFF PHARMACIST—Male, single. Served hospital pharmacy internship, plus 2 years U.S. Army pharmacist. Registered Washington, D. C. PW-110.

CHIEF PHARMACIST—Female, single, registered Penna. 12 years' experience Chief Pharm. Desires to locate in Penna. or Ohio. PW-111.

STAFF OR ASST. CHIEF PHARMACIST—Male, single, registered Mass. Retail experience plus 2 years hospital corpsman USN. Desires to locate around Boston, Mass. PW-112.

CHIEF or ASST. CHIEF PHARMACIST—Male, married, registered Mich. and Ariz. Served hospital pharmacy internship. Retail experience plus 7 years' hospital pharmacy experience. PW-113.

STAFF PHARMACIST—Male, married, registered Mass. Retail and hospital pharmacy experience. Desires locate east or northeast. PW-114.

CHIEF or STAFF PHARMACIST—Female, single, registered Tex. Desires to locate in east. PW-115.

STAFF PHARMACIST—Female, single. B.S. Retail experience only. Registered Fla. PW-116.

ASST. CHIEF PHARMACIST—Male, single. B.S. Vet. Adm. Hosp. experience. Registered Va. and Washington D.C. PW-117.

STAFF PHARMACIST—Male, married. B.S. Registered La., Va., and Washington, D.C. PW-118.

ASST. DIRECTOR OR DIRECTOR OF PHARMACY SERVICES—Male, single, B.S. Retail and 4 years' hospital experience. Registered Ill. PW-119.

ADMINISTRATOR—Male, married. D. Sc. 15 years hospital pharmacist. Desires locate Florida. PW-120.

PHARMACIST—Male, single. B.S. Registered Maine. Served hospital pharmacy internship. PW-122.

CHIEF PHARMACIST—Male, single. Registered Conn. and N.J. 10 years' hospital pharmacy experience. B.S. PW-123.

CHIEF PHARMACIST—Male, single. 10 years' hospital pharmacy experience. 1 year pharmacy internship. Registered Ariz., Ga., New Mexico, prefers south. PW-124

CHIEF PHARMACIST—Male, married 8 years' VA Hospital. Registered Mo., Tenn. and Ark., prefers locate in south. PW-125

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